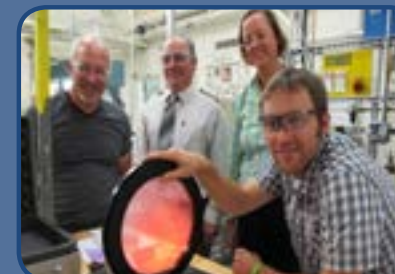


NEWSLINE

2015 YEAR IN REVIEW



LAWRENCE LIVERMORE NATIONAL LABORATORY



CONTENTS

Top 10 science stories 2

January 6

February 9

March 11

April 17

May 22

June 24

July 26

August 31

September 34

October 38

November 40

December 45

Recognition and Awards . . . 50

This issue of *Newsline* was produced by the Public Affairs Office. It represents a sample of the science and technology, people and operations highlights of the year. It is available on the [LLNL website](#).

On the cover: Various highlights of the year

Lawrence Livermore National Laboratory is operated by Lawrence Livermore National Security, LLC, for the U.S. Department of Energy, National Nuclear Security Administration under Contract DE-AC52-07NA27344 LLNL-WEB-458451



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TOP STORIES FROM 2015

HIGHLIGHTS

In his recent address to employees, Lawrence Livermore Director Bill Goldstein called 2015 an “exceptional year” for national security and scientific accomplishments.

This is fitting for a year in which the National Nuclear Security Administration (NNSA) and its national labs celebrated the 20th anniversary of the Stockpile Stewardship Program, the science-based effort to ensure the safety, security and viability of the nation’s nuclear deterrent without underground explosive testing. Nuclear testing and the development of new nuclear weapons systems ended in 1992.

The scientific research capabilities developed for stockpile stewardship at Lawrence

Livermore have found broader application in addressing such challenges as nonproliferation, cybersecurity, clean energy, climate change, manufacturing and medicine.

To end the year with a bang, the International Union of Pure and Applied Chemistry credited Laboratory researchers and collaborators with the discovery of elements 115, 117 and 118.

The list that follows is in no particular order, and represents only a sampling of the Lab’s accomplishments in calendar year 2015. More highlights may be viewed throughout this look back at 2015.

.....



The preamplifiers of the National Ignition Facility are the first step in increasing the energy of laser beams as they make their way toward the target chamber. NIF conducted a record number of shots in FY15, at 356.

HIGHLIGHTS FROM 2015

- **The National Ignition Facility (NIF)** — Built by NNSA specifically for stockpile stewardship experimentation, the world's largest and most powerful laser (NIF) provided a wealth of relevant data in 2015. Six weeks before its targeted goal, NIF achieved its 300th shot, a substantial increase from the 191 shots conducted in fiscal year 14. These shots yielded important data on equation of state, weapons effects and the dynamics of materials — information critical to addressing long-standing stockpile stewardship challenges important to certification. FY15 also saw the successful introduction of plutonium shots at NIF, each producing program-relevant data. NIF conducted a total of 356 shots for FY15 and has set a goal of 400 shots for FY16.
- **Stockpile Stewardship: plutonium shock experiments and the Life Extension Program** — The Nuclear Weapons Council authorized the W80-4 Life Extension Program to progress to a new phase, *Feasibility Study and Design Options*. The W80-4, for which LLNL is the design laboratory, is the selected warhead for the US Air Force's Long Range

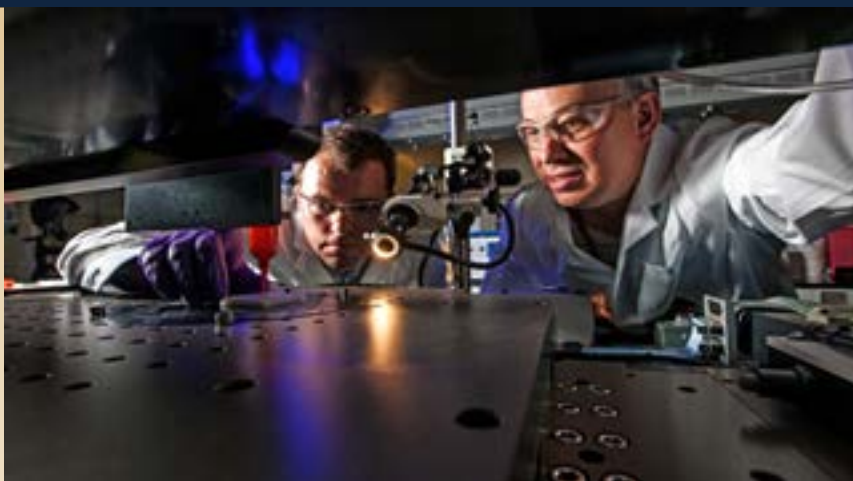
Standoff (LRSO) cruise missile. In another stockpile stewardship milestone, a team of LLNL and National Security Technologies researchers completed a series of experiments to measure the properties of plutonium at high pressure and temperature to unprecedented accuracy using strong shock waves on the Joint Actinide Shock Physics Experimental Research Facility, or JASPER.

- **Iran negotiations** — The Laboratory played a critical role in the technical analysis of data that led to the country's historic agreement with Iran. LLNL provided U.S. negotiators with information on Iran's nuclear weapon capabilities. In the future, the Lab will play a role in inspections that will follow the agreement, offering both technology and training. This type of support has been going on at LLNL for 50 years.
- **Community outreach** — The Lab held the Department of Energy's first My Brother's Keeper (MBK) event, which brought to the Lab more than 60 disadvantaged

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HIGHLIGHTS FROM 2015



Lawrence Livermore engineers Eric Duoss (left) and Tom Wilson use an additive manufacturing process called direct ink writing to develop an engineered "foam" cushion.

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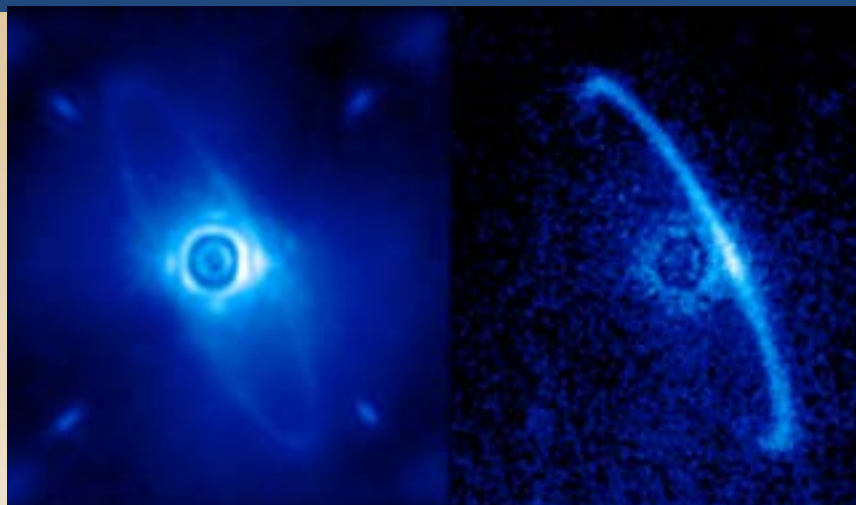
youth from Oakland, San Francisco and Tracy. This initiative seeks to address the opportunity gaps experienced by disadvantaged youth and instill a passion for science, technology, engineering and mathematics (STEM).

- **Advanced/additive manufacturing of materials** — LLNL completed the first additive manufacturing of 21-6-9 stainless steel and achieved two additional firsts: a fabricated demonstration object and the "printing" of a new molecule; in February, General Electric signed a cooperative research and development agreement to use the Lab's ALE3D code to improve part quality and minimize defects in the additive manufacturing laser process.
- **High performance computing** — LLNL led the development of DOE's High Performance Computing for Manufacturing (HPC4Mfg) initiative. Under the program DOE makes funds available to Oak Ridge, Lawrence Berkeley and Lawrence Livermore national labs to work with qualified industry partners to develop clean energy manufacturing processes and technologies. LLNL's Sequoia supercomputer and technical assistance was used by a University of Texas-led team to complete an Earth mantle convection simulation that

won the 2015 Gordon Bell Prize. Through the Collaboration of Argonne, Oak Ridge and Livermore national laboratories (CORAL), NNSA and the DOE Office of Science are partnering on the next generation of supercomputers. Working with IBM, LLNL will deploy Sierra, a 120-plus petaflops (quadrillion floating point operations per second) advanced technology system, in the 2018 timeframe. In FY15 LLNL led the tri-lab procurement of Commodity Technology Systems (CTS-1), which will bring petaflop computing clusters to Livermore, Sandia and Los Alamos national laboratories for stockpile stewardship work.

- **Neural technology** — The Defense Advanced Research Projects Agency (DARPA) in February selected Lawrence Livermore and its collaborators to build the world's first neural system to enable naturalistic feeling and movements in prosthetic hands. Known as Hand Proprioception and Touch Interfaces (HAPTIX), the program seeks to provide wounded service members with dexterous control over advanced prosthetic devices that substitute for amputated hands. LLNL's

HIGHLIGHTS FROM 2015



Gemini Planet Imager's first light image of the light scattered by a disk of dust orbiting the young star HR4796A. This narrow ring is thought to be dust from asteroids or comets left behind by planet formation; some scientists have theorized that the sharp edge of the ring is defined by an unseen planet. The left image shows normal light, including both the dust ring and the residual light from the central star scattered by turbulence in the Earth's atmosphere. The right image shows only polarized light. Leftover starlight is unpolarized and hence removed from this image. The light from the back edge of the disk is strongly polarized as it scatters towards us.

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Neural Tech Group and its collaborators (Case Western Reserve University and the Louis Stokes Cleveland Veterans Administration Medical Center) are working to develop neural interface systems that measure and decode motor signals recorded in peripheral nerves and muscles in the forearm by using tiny electrodes.

- **Nuclear detection** — An LLNL team played a leading role in fielding the recent Source Physics Experiment (SPE-4 Prime) detonated at the Nevada National Security Site (NNSS). The SPE tests consisted of a series of seven underground, high-explosive field tests in hard rock that are designed to improve the United States' ability to detect and identify low-yield nuclear explosions amid the clutter of conventional explosions and small earthquakes. The SPE tests represent a U.S.-interagency-wide endeavor, with NNSA's NNSS, LANL, LLNL, Sandia national laboratories and the Department of Defense's Defense Threat Reduction Agency serving as partners.
- **Space and planetary science** — Lawrence Livermore researchers were part of an international team that recently discovered the most Jupiter-like planet ever seen in

a young star system, providing new clues to understanding how planets formed around our own sun. This discovery continues the Lab's history of seminal contributions to space science, from the first computer simulations of supernova hydrodynamics to the discovery of galactic dark matter. The observation was made with the Gemini Planet Imager, a Livermore designed and built instrument that uses advanced adaptive optics to directly image extrasolar planets. In other space science research, LLNL scientists found that Mercury's surface darkening could be caused by carbon delivered by comets and comet dust.

- **Tracing contaminated food to its source** — LLNL researchers, in collaboration with the startup DNATrek, have developed a cost-effective and highly efficient method to accurately trace contaminated food back to its source. Lawrence Livermore originally designed the technology, known as DNATrax, to safely track indoor and outdoor airflow patterns.

.....



This image was taken during the August 2014 eruption of Tavurvur in Papua New Guinea. Lawrence Livermore researchers identified the climatic signals of some of the larger early 21st-century eruptions (such as the October 2006 eruption of Tavurvur).

A month-by-month recap

The 2015 events at Lawrence Livermore

Lawrence Livermore's *Newsline* month-by-month highlights from 2015 are listed on the following pages. Listings are in four categories:

- Science and technology
- People
- Operations
- Recognition and Awards

This 2015 Year-in-Review appears only electronically; there is no print edition. The Web-based format offers the advantage of providing links to the referenced *Newsline* articles, press releases or the *LLNL Report*.

.....

JANUARY 2015

Science and Technology

The "warming hiatus" that has occurred over the last 15 years is caused in part by small volcanic eruptions, according to a team including Lawrence Livermore researchers.

[Read more](#)

Quotables

"The fact that these volcanic signatures are apparent in multiple independently measured climate variables really supports the idea that they are influencing climate in spite of their moderate size. If we wish to accurately simulate recent climate change in models, we cannot neglect the ability of these smaller eruptions to reflect sunlight away from Earth."

- Mark Zelinka, about small volcanoes accounting for a climate warming hiatus

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LLNL physical chemist George Farquar, who led a Lab team that invented DNATrax, demonstrates how the product can be applied to food to identify it down the food chain. If the food turns out to be tainted, DNATrax can trace it back to the source.

Lawrence Livermore researchers, in collaboration with a local startup company, develop a cost-effective and highly efficient method to accurately trace contaminated food back to its source, in the form of a spray.

[Read more](#)

Laboratory researchers develop a new technology that provides realistic radiation detection training by directly injecting simulated radiation signals into the analog amplifier of the real detectors used by first responders and inspectors.

[Read more](#)

European colonization and agriculture use in North America in the late 1800s and early 1900s caused as much erosion of the landscape over just a few decades' time as would naturally have taken thousands of years, according to Lab researchers.

[Read more](#)

Lawrence Livermore researchers report for the first time the observance of well-developed, oriented magnetic filaments generated by the Weibel mechanism in counter-streaming, collision-less flows generated by high-power lasers.

[Read more](#)

Lab researchers report that laser-driven compression experiments reproduce the conditions deep inside exotic super-Earths and giant planet cores, and the conditions during the violent birth of Earth-like planets, documenting the material

2015 Quotables

“We all hear horror stories about contaminated foods. We are not prepared to deal with an outbreak of pathogens such as E. coli and salmonella in tainted foods. However, DNATrax is a quick and efficient way to stop these foods from sickening more people and costing producers more money due to massive recalls triggered by poor traceability.”

- DNATrek CEO Anthony Zografos, who licensed the technology from Lawrence Livermore

properties that determined planet formation and evolution processes.

[Read more](#)

Scientists report they've reconstructed the past climate for the region around Cantona, a large fortified city in highland Mexico, and found the population drastically declined in the past, at least in part because of climate change.

[Read more](#)

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The Lab earned excellent ratings in its annual assessment because of its ability to perform critical science and technology, such as the advancements made at NIF.

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People

Lawrence Livermore participates as a partner in a Cybersecurity Workforce Pipeline Consortium to help solve pressing and challenging cybersecurity problems, to meet mission needs, anticipate future challenges and assist in developing talent for the growing cyber workforce.

[Read more](#)

Betsy Cantwell of the economic development office announces she is leaving the Laboratory to accept a position at Arizona State University as deputy vice president in the Office of Knowledge Enterprise Development and professor in the School for Engineering of Matter, Transport & Energy.

[Read more](#)

Researchers and budding entrepreneurs from Livermore's two national laboratories get a look at life as an entrepreneur at the kickoff for the Department of Energy's Lab-Corps pilot program.

[Read more](#)

Operations

The Laboratory receives two ratings of "excellent" and three ratings of "very good" in an assessment released by the Livermore Field Office.

[Read more](#)

A yearlong series of informational articles is rolled out detailing process improvements to the institutional Work Planning and Control Program.

[Read more](#)

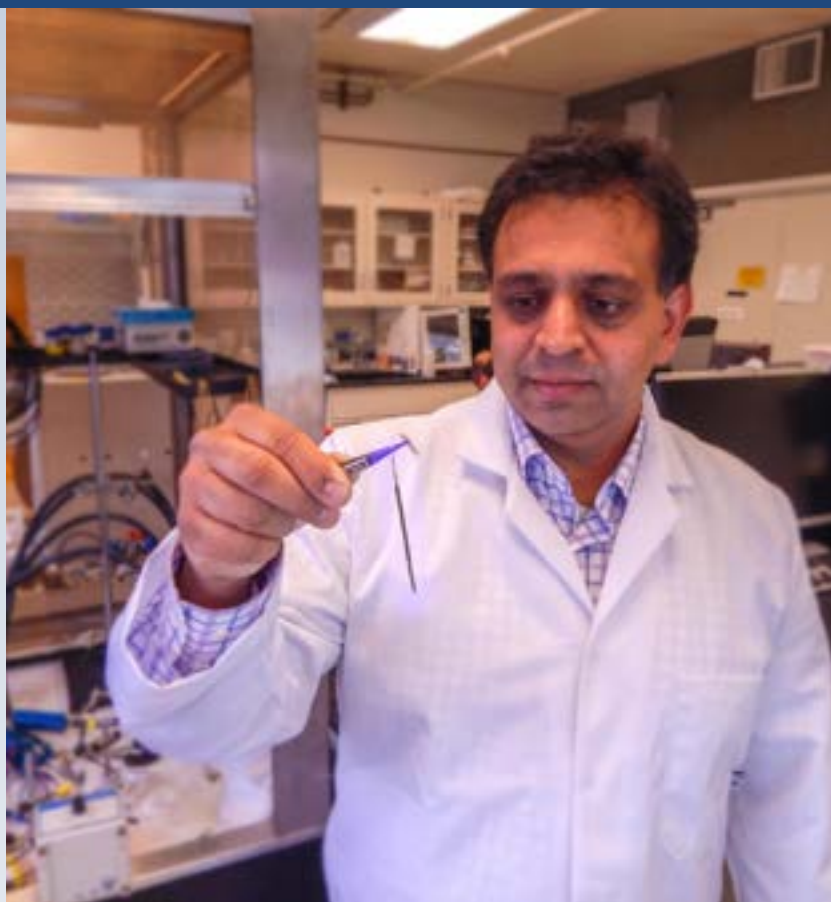
2015 Quotables

"Demand for experiments at NIF has always exceeded capacity. The impressive work by the team at NIF to produce additional shots has provided important new opportunities for NIF users and increased this unique scientific platform's contributions to national security. I congratulate the NIF team and its many partners for not only meeting, but exceeding the goal."

*- Brig. Gen Stephen Davis, USAF,
acting deputy administrator for Defense Programs,
about NIF surpassing its shot goal*

The DOE/NNSA finalizes a license agreement with Whitethorn Solar, a wholly owned subsidiary of Juwi Solar Inc., for a solar electrical generation system to be built on-site at the Laboratory.

[Read more](#)



Lawrence Livermore Engineer Sat Pannu and his Neural Tech Group research team are developing wireless electronic packages for HAPTIX. These packages would contain electronics that record and stimulate the peripheral nervous system to control movement and sensation in a prosthetic hand.

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Weapons and Complex Integration (WCI) announces the reorganization of its program and line structure, as well as changes to key management personnel in an effort to better align with near- and long-term program directions and deliverables.

[Read more](#)

FEBRUARY 2015

Science and Technology

Using the same baking soda found in grocery stores, Lawrence Livermore scientists, along with colleagues from Harvard University and the University of Illinois at Urbana-Champaign, develop a new type of carbon capture media composed of core-shell microcapsules, which consist of a highly permeable polymer shell and a fluid (made up of sodium carbonate solution) that reacts with and absorbs carbon dioxide.

[Read more](#)

The Defense Advanced Research Projects Agency selects LLNL to join a collaborative research team that intends to build the world's first neural system to enable naturalistic feeling and movements in prosthetic hands.

[Read more](#)

Using the Nuclear Spectroscopic Telescope Array, Lab researchers use the X-ray spectra of an extremely luminous black hole to detect a nearly spherical stream of highly ionized gas streaming

2015 Quotables

“The HAPTIX project intends to achieve a phenomenal breakthrough in prosthetics never thought possible. Its neural system intends to re-create a range of functions, including a real feeling of touch when holding another person’s hand.”

- LLNL's HAPTIX project leader Sat Pannu

out of it. The discovery allows astronomers to measure, for the first time, the strength of ultra-fast black hole winds and show that they are mighty enough to affect the fate of their host galaxies.

[Read more](#)

People

Colleagues, friends and family gather at the Robert Livermore Community Center in a celebration of life honoring the Lab's former acting director Bret Knapp. Knapp, 56, a dedicated family man with



Steven Leahy, a Marine Corps corporal who served in Iraq, spent a summer doing computer modeling at Lawrence Livermore's National Security Engineering Division's Pulsed Power Lab. He is adjusting a component on the capacitor bank that supplies the initial "seed current" for magnetic flux compression generator experiments.

a dry wit and wry welcoming smile, died Nov. 18, 2015 after a valiant battle with cancer.

[Read more](#)

STRATCOM Commander Adm. Cecil Haney visits the Laboratory for briefings and discussions with senior managers.

[Read more](#)

For the first time since the 2013 reduction in force, the Security Organization's academy graduates 14 security police officers and two security police sergeants.

[Read more](#)

Roger Aines, a geochemist who runs the Carbon Fuel Cycle Program at Lawrence Livermore, answers questions from the public about capturing greenhouse gases by using things found in a kitchen cabinet, on the popular social media site Reddit.

[Read more](#)

Member of the Little Rock Nine and journalist Melba Patillo Beals visits the Laboratory and gives a compelling talk in celebration of Black History Month.

[Read more](#)

Operations

Lawrence Livermore and Lawrence Berkeley national laboratories, NASA Ames Research Center and NASA Jet Propulsion Laboratory launch the Troops to Technology Workforce

2015 Quotables

"(Troops to Technology) is an exciting program that helps America's heroes find meaningful careers that build off the technical training they received in the military, and it fills a shortage of high-skilled workers for an industry that's critical for California and the nation's economy. Veterans are highly motivated and disciplined individuals who bring tremendous value to many employers."

- Beth McCormick, LLNL Engineering's Recruiting and Diversity manager

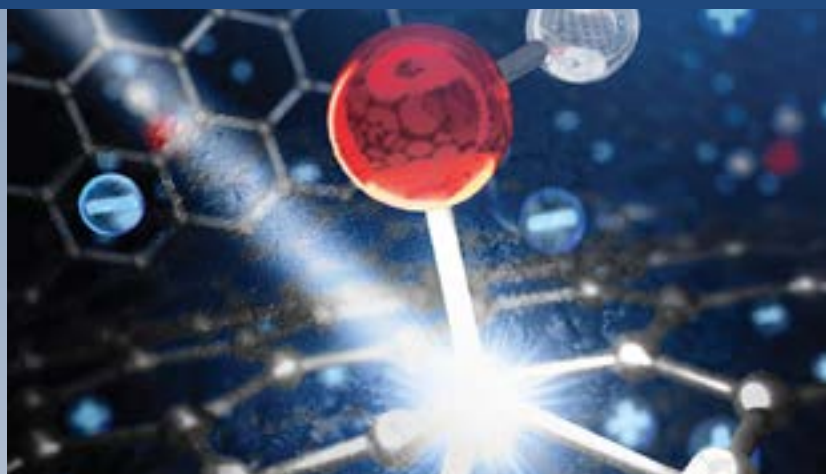
Development Initiative, to help service members and veterans develop highly specialized skills and eventually land high-paying advanced manufacturing positions.

[Read more](#)

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Lawrence Livermore research has opened a new window to more efficient electrochemical energy storage systems.

Sensitive Country Foreign Nationals (SCFN) are allowed remote access to LLNL network resources, including Web-based library journals, through the VPN-B (Blue) network.

[Read more](#)

The Laboratory hosts more than 60 information technology experts from the Department of Energy to address implementing the public key infrastructure providing encryption and signature credentials for an enterprise-wide, two-factor authentication.

[Read more](#)

MARCH 2015

Science and technology

Violent collisions between the growing Earth and other objects in the solar system generate significant amounts of iron vapor, according to a new study by LLNL scientist Richard Kraus and colleagues.

[Read more](#)

The National Ignition Facility plays a growing role in LLNL's nuclear forensics work by providing radioactive samples from nuclear fusion experiments for analysis.

[Read more](#)

Lawrence Livermore researchers identify electrical charge-induced changes in the structure and bonding of graphitic carbon electrodes that may one day affect the way energy is stored.

[Read more](#)

2015 Quotables

“There are many surprises to be found in nature under the extreme conditions that we call the high energy density regime, and exploring material properties under these conditions has been challenging.”

*- Hye-Sook Park,
on determining structural evolution under pressure*

A systematic study of the effects on National Ignition Facility implosions of the ultra-thin mounting membranes that support target capsules inside NIF hohlraums is reported by LLNL researchers.

[Read more](#)

A team of LLNL scientists reports a key finding that can be used to determine the evolution of structures under high pressure and strain rates.

[Read more](#)

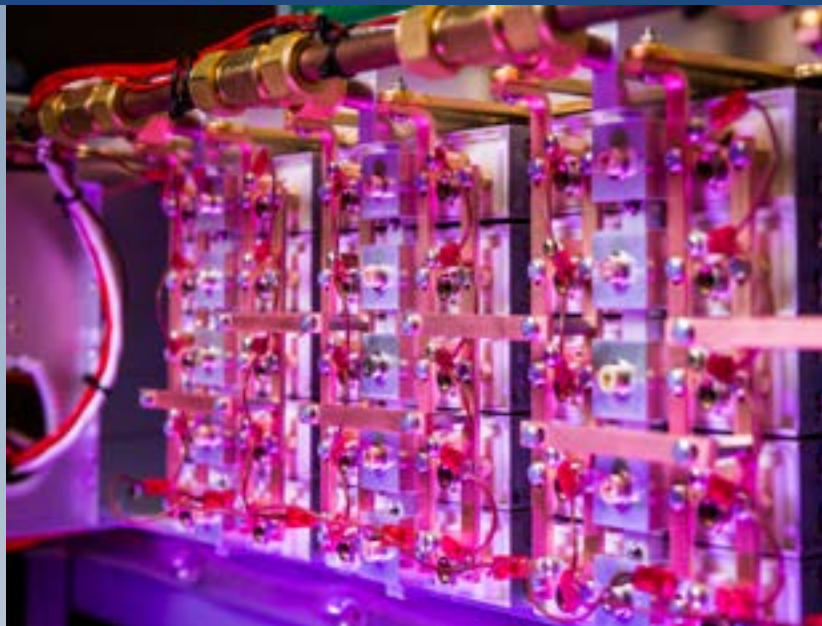
A key component of the High-Repetition-Rate Advanced Petawatt Laser System is installed and commissioned at LLNL.

[Read more](#)

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To drive diode arrays, LLNL needed to develop a completely new type of pulsed-power system, which supplies the arrays with electrical power by drawing energy from the grid and converting it to extremely high-current, precisely shaped electrical pulses.

The Laboratory installs and commissions the highest peak-power laser diode arrays in the world, representing total peak power of 3.2 megawatts.

[Read more](#)

General Electric and Lawrence Livermore receive \$540,000 to develop open-source algorithms that will improve additive manufacturing of metal parts.

[Read more](#)

A Lawrence Livermore engineering team and Southern California-based Masten Space Systems — one of three companies leading teams working on the Defense Advanced Research Projects Agency Experimental Spaceplane (XS-1) program, garner two contracts for rocket development.

[Read more](#)

Megan Bruck Syal, a postdoctoral researcher at LLNL, is the lead author of a study that answers a long-standing mystery about why Mercury's surface is darker than the moon's surface, by implicating carbon as a "stealth" darkening agent.

[Read more](#)

A group of researchers, including scientists from Lawrence Livermore, use the Linac Coherent Light Source to document the quick transformation of shock-compressed aluminum into warm dense matter.

[Read more](#)

2015 Quotables

"We want to spin out our discoveries and innovations to industry so that they will have an impact on the well-being of the United States."

- LLNL Director Bill Goldstein

Lawrence Livermore scientists and collaborators find that soil organic matter may be much more vulnerable to climate change than previously thought.

[Read more](#)

People

Patricia Falcone is selected as deputy director for Science and Technology.

[Read more](#)

David Jefferson, a computer scientist in the Lawrence Livermore's Center for Applied Scientific Computing, discusses the fundamental security

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Students get an up-close look at science at the Expanding Your Horizons conference.

risks and privacy problems of Internet voting in a Computation Seminar Series presentation, entitled "Intractable Security Risks of Internet Voting."

[Read more](#)

Hans Mark, a renowned expert in aerospace design, national defense technology and national security policies, who once served as Physics division leader at LLNL, delivers a Director's Distinguished Lecture Series presentation.

[Read more](#)

Operations

Four Laboratory employees pass their Ham Club licensing technician's exam and receive their first FCC ham radio licenses.

[Read more](#)

The Lawrence Livermore Laboratory Women's Association, together with the Bible Study Groups, hosts a special presentation in honor of Women's History Month, "A Historical Perspective of Women in the Bible."

[Read more](#)

Lawrence Livermore scientist Arthur Rodgers and Los Gatos High School teacher Dan Burns present "Computer Simulations of Earthquakes in the San Francisco Bay Area," the final lecture in the 2015 Science on Saturday series for students.

[Read more](#)

More than 400 girls in grades 6 to 9 attend the LLNL sponsored Tri-Valley Expanding Your Horizons

2015 Quotables

"When my dad first told me about it, I was like 'engineering? Really?' But now I actually enjoy math. I want to know everything there is to know."

*- Iraq veteran Frankie Stoneham,
about the Las Positas Engineering Technology Program*

Conference on the Las Positas College campus.

[Read more](#)

The Laboratory partners with The State Theatre in Modesto to bring a three-week series of "Science on Screen" to the theater on Saturdays in March.

[Read more](#)

The Department of Energy creates the Office of Technology Transitions to provide energy stakeholders with money from a nearly \$20 million fund to transition research to the marketplace, providing opportunities for the Laboratory to apply for funding to boost the commercial readiness levels of energy technologies.

[Read more](#)

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Lab researcher Abdul Awwal (left) and Dublin High School student Kaushik Kasi discuss a project at the 2014 Signal and Image Sciences Workshop.

Veterans interning at LLNL field questions on the popular social media website Reddit about their career-technical education and training in support of national security research.

[Read more](#)

The 2015 Lawrence Livermore National Laboratory Signal and Image Sciences Workshop is held at the Livermore Valley Open Campus' High Performance Computing Innovation Center.

[Read more](#)

Registration opens for the 2015 Teacher Research Academy, a professional development curriculum during the summer months for middle and high school science teachers and community college faculty, at the Laboratory's Edward Teller Education Center.

[Read more](#)

The Laboratory's Science Education Program hosts approximately 40 high school girls through the GetSet program (Girls Exploring Technology, Science and Engineering Together).

[Read more](#)

The Laboratory blocks OS 10.7 and below on computers that access the Laboratory via the Virtual Private Network, a security mitigation that helps to protect all of LLNL's information technology resources.

[Read more](#)

2015 Quotables

"It was great fun. I thought it was wonderful. The students were all bright, able and enthusiastic. They were interested in all kinds of topics. They found out I'd been a football player and that immediately gave me an in with them."

- Lab material scientist Troy Barbee, who has worked for years with Stanford students

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The Laboratory is featured in an entire category of clues, called the "Science of Security," on the TV game show "Jeopardy." [Read more](#)



The Lawrence Livermore Laboratory Women's Association (LLLWA) presented a panel discussion in honor of Women's History Month, highlighting five women employees who have been employed at the Lab for 33 years or more.

The LLNL Benefits Office hosts a series of workshops to provide information intended to increase awareness of programs available to enhance future financial security.

[Read more](#)

The Department of Energy establishes programs for employees (including federal, contractor and subcontractor employees) to raise various technical and/or safety concerns so that they are assessed and appropriate actions are taken.

[Read more](#)

Members of Stanislaus County's Alliance WorkNet, a private-public organization that blends economic development activities and workforce development assistance for existing and prospective companies in Stanislaus County, visit the Laboratory.

[Read more](#)

The Lab unveils a new website geared to employees looking to engage in a mentorship arrangement.

[Read more](#)

The Lab rolls out a new Safeweb, re-engineered by Livermore Information Technology staff.

[Read more](#)

The Lawrence Livermore Laboratory Women's Association presents a panel discussion in honor of Women's History Month, highlighting five women employees who have been at the Lab for 33 years or more.

[Read more](#)

2015 Quotables

"I grew up in a culture that unapologetically and unabashedly considered women of less importance and ability. I was fortunate to have mentors and role models to point out to me that that just wasn't true, which has made all the difference in my life."

- Monica Moya, a native of the Los Angeles area, who was the first in her family whose academic pursuits extended beyond high school

The Laboratory hosts a special St. Patrick's Day Fun With Science presentation.

[Read more](#)

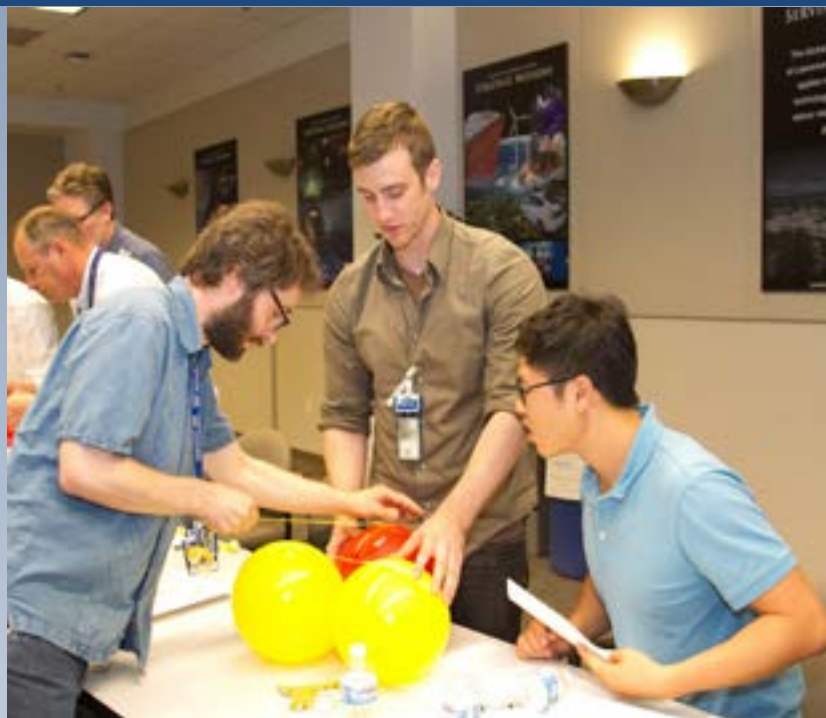
The Laboratory hosts a meeting with United Kingdom leadership from the Ministry of Defence, the Royal Navy and the Atomic Weapons Establishment and their U.S. counterparts from the Departments of Defense and Energy.

[Read more](#)

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In the Engineering Prototyping Challenge's "Egg Drop" competition, the winning team of "Three Balloons and Tape" was selected because it came in under budget, and had a unique landing system.

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The Lawrence Livermore National Laboratory Science Education Program hosts more than 40 high school girls from Stagg High School in Stockton.

[Read more](#)

Deputy Secretary of Energy Elizabeth Sherwood-Randall, who is responsible for management of the department and execution of the administration's highest priority energy initiatives, praises the role Lawrence Livermore plays in science, energy and national security during an all-hands presentation at the Laboratory.

[Read more](#)

LLNL rolls out a new "Yellow" wireless network for Laboratory-owned devices providing access to all internal, unclassified network resources.

[Read more](#)

More than 100 employees attend a special presentation by *New York Times* bestselling author, Steven Johnson, during which he discusses the history of ideas and innovations that made the modern world, sharing lessons from history's unsung innovators.

[Read more](#)

More than 45 engineers from the Engineering Directorate participate in the second in a series of Engineering Prototyping Challenges called "The Egg Drop," a design exercise that

2015 Quotables

"We have world-class talent at LLNL and we want to teach our scientists and engineers entrepreneurial skills that will help them in the innovation process, whether they're working with industry or government sponsors, or, if they choose, becoming part of a startup based on Lab technology."

—Industrial Partnerships Office Director Rich Rankin

encourages teams to collaborate in the design of an innovative and creative product.

[Read more](#)

Director Bill Goldstein summarizes the Laboratory's improved budget picture and



Participants in one of the biggest Computation hackathons yet.

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prospects for future growth, especially in LLNL's core weapons programs, during a Director's Update.

[Read more](#)

The Lawrence Livermore Laboratory Women's Association holds its annual scholarship awards ceremony and presents six employees with awards totaling \$8,600.

[Read more](#)

Director Bill Goldstein announces he will distribute the Strategic Performance Bonus in recognition of the Lab's excellent performance in fiscal year 2014.

[Read more](#)

The Laboratory enacts a new social media policy to provide employees and contractors clear rules for safe, secure use of social media.

[Read more](#)

The annual Good Friday protest draws nearly 100 people to the West Gate entrance of the Laboratory.

[Read more](#)

Computation has a big turnout for its spring hackathon, a 24-hour event encouraging Lab computer scientists to engage in collaborative programming and creative problem solving.

[Read more](#)

2015 Quotables

"We have no way in general of protecting systems from server attacks. It's a bad situation. Not only can cyber criminals attack vendor networks and servers, they can attack voter clients' systems as well."

- David Jefferson,
on internet voting

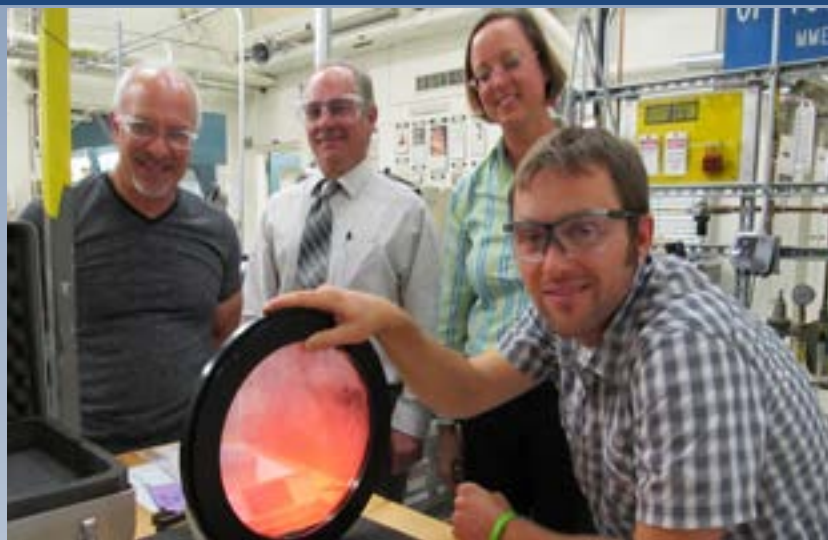
APRIL 2015

Science and technology

NASA releases a video honoring the fifth year in space for NASA's Solar Dynamics Observatory (SDO). Lawrence Livermore played a large role in the development of the imaging optics aboard. The SDO provides detailed images of the whole sun 24 hours a day.

[Read more](#)

The Gamma-Ray Spectrometer developed by Laboratory scientists onboard NASA's Mercury



Pictured from left: Peter Thelin, optician; Stephen Payne, Global Security N Program leader for radiation detection materials; Nerine Cherepy, Institute of Electrical and Electronics Engineers senior member; and Zachary Seeley, ceramicist, holding an 11.5-inch-diameter transparent ceramic scintillator fabricated for the Weapons and Complex Integration Enhanced Surveillance Campaign.

NOTE

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MESSENGER causes researchers to rethink their theories on the planet Mercury's formation.

[Read more](#)

Lawrence Livermore researchers make graphene aerogel microlattices with an engineered architecture via a 3D printing technique known as direct ink writing, making for better energy storage, sensors, nanoelectronics, catalysis and separations.

[Read more](#)

A paper is published in *Physical Review Letters* that details the work of researchers at the Lab's National Ignition Facility, testing target capsules to determine if thinner capsules can produce higher-velocity implosions with better symmetry than capsules used in previous experiments.

[Read more](#)

An international team of astronomers, including Will Dawson of LLNL, discovers that comatose galaxies, which contain many "red and dead" members that stopped forming stars in the distant past, can sometimes come back to life.

[Read more](#)

A team of researchers at the National Ignition Facility conduct the first experiment in a new Discovery Science campaign aimed at finding clues to the mystery of how stars are born in spectacular cosmic formations, such as those images captured by the Hubble Space Telescope in 1995, "The Pillars of Creation" in the Eagle Nebula.

[Read more](#)

2015 Quotables

"The LLNL environment is particularly conducive to teamwork, and my growth as a scientist is due to the constantly evolving opportunities to work alongside chemists, physicists, materials scientists, nuclear, electrical and mechanical engineers to solve problems that always seem to require a combination of exploratory basic science and pragmatic engineering."

– LLNL researcher Nerine Cherepy

People

Livermore scientist Nerine Cherepy is selected as a senior member of the Institute of Electrical and Electronics Engineers.

[Read more](#)



Rep. Eric Swalwell, D-Calif., addresses the crowd at a LabCorps event, which was hosted by Livermore's i-GATE Innovation Hub. Energy projects from Lawrence Livermore and Sandia national laboratories were selected to participate in the pilot DOE program to facilitate the commercialization of technologies with the potential to rapidly benefit society.

NOTE

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Patrice Turchi, group leader of the LLNL Material Science Division's Advanced Metallurgical Science and Engineering group, is installed as the 2015 president of The Minerals, Metals & Materials Society.

[Read more](#)

Martin Casado, former computer scientist at Lawrence Livermore National Laboratory turned Bay Area tech executive at a multinational software giant, is featured in a series about LLNL entrepreneurs.

[Read more](#)

Beth McCormick, recruiting and diversity manager at LLNL, attends the Joining Forces Initiative anniversary event with Michelle Obama and other leaders from across the country, announcing new commitments to ensure that every veteran and military family has an opportunity to achieve their career aspirations.

[Read more](#)

Livermore scientist Dick Post is fondly remembered for his legacy of contributions spanning a 63-year career at LLNL after he passes way.

[Read more](#)

Nearly 50 LLNL employees witness a special ceremony promoting Army Maj. Kenneth Spicer, who has been on assignment to the Laboratory, to lieutenant colonel.

[Read more](#)

2015 Quotables

"We will do our level best to support every entrepreneur."

— Christine Hartmann,
of the Lab's Institutional Proposal Development Office

Operations

Energy projects from Lawrence Livermore and Sandia national laboratories are selected to participate in a pilot Energy Department program to facilitate the commercialization of technologies with the potential to rapidly benefit society.

[Read more](#)

Several dozen Georgetown University graduate students, participating in a one-year master's program in emergency and disaster management, spend a week at Lawrence Livermore to gain insight to the Lab's programs and technologies.

[Read more](#)

The Lab celebrates the 30th anniversary of the X-ray laser.

[Read more](#)



More than 70 cadets and midshipmen from the Air Force, Army, Marines and Navy visit the Laboratory for the annual Reserve Officers' Training Corps (ROTC) Day.

LLNL kicks off the 10th annual Get Active fitness campaign, competing for the title "Fittest Lab in the Nation" with 10 national labs.

[Read more](#)

More than 80 men and women from early career to senior management attend the "Meeting of the Minds" networking event, sponsored by the Laboratory Women's Association's Women in Science & Engineering group, designed to help Lab personnel connect, engage and learn while having fun.

[Read more](#)

Director Bill Goldstein signs a memorandum of understanding with UC Davis Chancellor Linda Katehi that is directed toward increasing collaborations between the campus and the Laboratory.

[Read more](#)

California Highway Patrol Capt. Linda Franklin, recently appointed to head the Dublin office of the CHP, visits the Lab for tours and discussions on a range of topics of mutual interest to both organizations.

[Read more](#)

A groundbreaking ceremony is held on a project to build a new armory for the Lab's Protective Force Division.

[Read more](#)

2015 Quotables

"The new armory is an essential and required capability for us."

– Lab Director Bill Goldstein

LLNL welcomes more than 70 cadets and midshipmen from the Air Force, Army, Marines and Navy for the annual Reserve Officers' Training Corps (ROTC) Day.

[Read more](#)

Physics Nobel Prize winner Robert Laughlin speaks about "Critical Waves and the Length Problem of Biology" as part of the Deputy Director for Science and Technology office and the Physical and Life Sciences Directorate-sponsored colloquium.

[Read more](#)

LLESA rolls out its third annual Fitness Bingo to promote its programs and encourage employees to be more active.

[Read more](#)

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"Fun With Science" experiments are part of Take Your Daughters and Sons to Work Day.

The Laboratory hosts the annual workshop of the Department of Energy Security Awareness Special Interest Group, a peer-to-peer network of federal and contractor representatives responsible for safeguards and security at DOE facilities.

[Read more](#)

The Laboratory welcomes approximately 300 children on-site for "Take Our Daughters and Sons to Work Day," to provide a window into the workplace and to promote an enriching educational experience by giving children of LLNL employees the opportunity to job shadow their parents, see what they do and participate in a variety of activities.

[Read more](#)

Eligible employees receive a strategic performance bonus (1 percent of their annualized base rate) as part of the Lab's Variable Compensation Plan.

[Read more](#)

Livermore Information Technology (LivIT) consolidates its customer service teams (Cellular Services, 4Help Service Desk, Laptops on Foreign Travel and the Site License Office) to a single location, forming a new LivIT Customer Service Center located in Trailer 4725.

[Read more](#)

Construction work to install a second kiosk at the entrance of Greenville Road and Eastgate Drive begins.

[Read more](#)

2015 Quotables

"Dante is one of the workhorse diagnostics of NIF — it participates in almost every shot. Even when a hohlraum is not used, it is one of the few absolutely calibrated soft X-ray diagnostics that can provide absolute measurements of the conversion efficiency of laser light into X-rays."

- Alastair Moore, the scientist responsible for Dante

Microsoft Lync is replaced by Cisco Jabber as LLNL's standard instant messaging software as part of the LivConnected initiative, led by Livermore Information Technology.

[Read more](#)

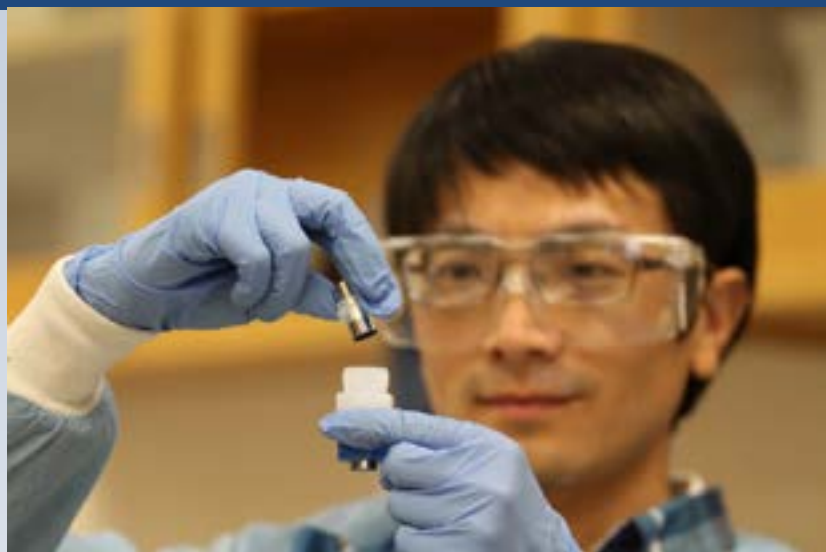
Members of the DOE Office of Economic Impact and Diversity visit the Lab for presentations and tours.

[Read more](#)

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Lab researcher Jianchao Ye shows off an improved lithium ion battery.

MAY 2015

Science and Technology

A team of researchers from Lawrence Livermore and UC Davis find that covering an implantable neural electrode with nanoporous gold could eliminate the risk of scar tissue forming over the electrode's surface.

[Read more](#)

A study by LLNL and Kansas State University scientists find that the Lawrence Livermore Microbial Detection Array could help identify diseases in the commercial swine industry.

[Read more](#)

Due to challenges for achieving ignition, other hohlraum platforms are sought to achieve a balance of efficient and symmetric hohlraum drive. One of the candidates is a rugby football-like hohlraum shape, which resembles a cylinder with the corners of the can rounded off to minimize surface area.

[Read more](#)

New results from the NASA NuSTAR telescope show that a supernova close to our galaxy experienced a single-sided explosion.

[Read more](#)

American energy use continues to grow slowly in 2014, fueled by increases in the use of natural gas, wind and solar, according to energy flow charts released by LLNL.

[Read more](#)

2015 Quotables

“The performance improvement we’ve seen in the electrodes is a breakthrough that has real world applications.”

*- Postdoc Jianchao Ye,
about an improved lithium ion battery*

Lawrence Livermore researchers determine that a tunnel bomb explosion by Syrian rebels was less than 60 tons, as claimed by sources.

[Read more](#)

Using ever more energetic lasers, Lawrence Livermore researchers produce a record high number of electron-positron pairs, opening opportunities to study extreme astrophysical processes, such as black holes and gamma-ray bursts.

[Read more](#)

Researchers from LLNL and three other institutions assist a Bay Area biomedical company in advancing its Ebola virus detection test.

[Read more](#)

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Peter Thelin (left) and Eric Strang work side-by-side in LLNL's Optics Shop.

Located one-and-a-half floors underground in LLNL's Bldg. 151, the Nuclear Counting Facility (NCF) leverages its well-shielded, low-background environment to accurately measure nuclear materials for the National Ignition Facility and a variety of other Laboratory programs.

[Read more](#)

People

As one of the few remaining practitioners of hand-polished optics, Peter Thelin is passing his artistry along to the next generation of optics specialists.

[Read more](#)

LLNL's Office of the Chief Information Officer and Livermore Information Technology host 60 students and teachers for the third annual Information Technology Job Shadow Day.

[Read more](#)

Lara Leininger is selected to lead LLNL's Energetic Materials Center.

[Read more](#)

Congressman Eric Swalwell visits the Laboratory to witness an experiment at the National Ignition Facility.

[Read more](#)

The Laboratory hosts 14 students, ranging in age from middle school to college, from Green Technical Education and Employment for a full day of presentations and tours.

[Read more](#)

2015 Quotables

"Art is anything you put your mind to."

*- Peter Thelin,
who has been perfecting
his hand-polishing skills for more than 30 years*

Twenty high school students from Galt High School's Biomedical, Engineering, Science and Technology Academy visit the Laboratory.

[Read more](#)

Operations

The Asian Pacific American Council presents its annual scholarships to four high school seniors in one of the events highlighted during Asian Pacific Heritage Month.

[Read more](#)

The Livermore Amador Valley Transit Authority, operator of the Wheels bus system, hosts the dedication of its new Art Shelter Mural Project located just outside the West Gate of the Laboratory.

[Read more](#)

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Lawrence Livermore broke ground for a modular and sustainable supercomputing facility that will provide a flexible infrastructure to accommodate the Laboratory's growing demand for high performance computing. From left: Weapons and Complex Integration Principal Associate Director Charles Verdon, Livermore Mayor John Marchand and Director Bill Goldstein.

LLNL breaks ground on a modular and sustainable supercomputing facility that will provide a flexible infrastructure able to accommodate the Laboratory's growing demand for high performance computing.

[Read more](#)

JUNE

Science and Technology

A new study led by Megan Bruck Syal of LLNL examines how cometary impacts may transform the surface of the moon in ways distinct from asteroidal impacts, producing unique signatures that are consistent with observations of mysterious, ghost-like features called "lunar swirls."

[Read more](#)

With funding from the DOE, Lawrence Livermore and the University of Washington partner to advance the sheared-flow stabilized Z-pinch concept and assess its potential for scaling to fusion conditions. The team is awarded \$5.28 million from ARPA-E's Accelerating Low-cost Plasma Heating and Assembly Program.

[Read more](#)

Computer simulations exploring the effects of shock waves on crystalline HMX, performed by Ryan Austin, a staff scientist in Engineering's Computational Engineering Division, and a team of LLNL researchers, is featured on the cover of the

2015 Quotables

"By partnering with IBM and NVIDIA, the Centers of Excellence bring together the people who know the science, the people who know the code and the people who know the machines — ensuring we are innovating across the board so that Sierra and Summit will be primed to achieve their missions for national security and scientific advancement as soon as they're delivered."

*- Michel McCoy,
program director for Weapon Simulation and Computing*

Journal of Applied Physics. The work is part of a broader research project to better understand the safety and performance of high explosives, such as HMX, which are used in the nuclear stockpile and by the Department of Defense.

[Read more](#)

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Target area operator Sky Marshall installs new apertures in the Dante 2 X-ray diodes.

NOTE

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LLNL plays a leading role in fielding the recent Source Physics Experiment (SPE-4 Prime) detonated at the Nevada National Security Site.

[Read more](#)

An international team led by Brian Bucher of LLNL makes an important contribution to the ability to predict the unique chemical signature left by early stars with the first direct measurement under stellar conditions of an important nuclear reaction.

[Read more](#)

People

More than 60 disadvantaged youth from Oakland, San Francisco and Tracy visit the Laboratory for a special "Day at the Lab" as part of the White House initiative, "My Brother's Keeper."

[Read more](#)

Operations

The Laboratory welcomes more than 600 students from universities nationwide and around the world to engage in work-study employment opportunities in relevant science, technology, engineering and mathematics (STEM) fields during the summer academic break. Fourteen students are featured in a

2015 Quotables

"I want to be a mechanical engineer. I enjoyed Fun With Science, seeing electricity being conducted and what it can be conducted to and seeing what happens in air pressure in certain situations."

*- Tre Germany,
a seventh grade student
at Claremont Middle School in Oakland,
who came dressed in a three-piece suit
and was passing out business cards
during the "My Brother's Keeper" event*

series of articles highlighting the diverse group of 2015 summer students at LLNL.

[Read more](#)

CalCharge welcomes LLNL as its newest partner member, joining Lawrence Berkeley National



Roger Aines (right), a geochemist who runs the Lab's Carbon Fuel Cycle Program, discusses a carbon capture technique using microcapsules during a panel discussion at Lawrence Livermore.

Laboratory and SLAC National Accelerator Laboratory.

[Read more](#)

Lawrence Livermore National Security, LLC accepts applications for its annual Community Gift Program for 2015.

[Read more](#)

Nearly 50 researchers from LLNL and Sandia National Laboratories/California get down to business for three days, learning about life as an entrepreneur.

[Read more](#)

In a continuing partnership with Orion Academy, the LLNL Engineering Directorate hosts Marissa Hall, a senior from Orion, as this year's science, technology, engineering and mathematics intern.

[Read more](#)

The third annual Livermorium Day celebration is held at Livermorium Plaza. The day recognizes the creation of Livermorium, chemical element 116, which was named in honor of the city and researchers from LLNL, who helped discover it. [Read more](#)

JULY

Science and Technology

LLNL's Nir Goldman receives a \$500,000 NASA grant to continue his astrobiology

2015 Quotables

"It's really gratifying. I've been able to utilize some of the basic skills and knowledge of processes I use in my work at the Lab as a volunteer for a really great cause. It feels like an extension of what we do here at the Lab for the good of society. It was a great honor to receive the award."

- Doug Modlin
about volunteering for Cystic Fibrosis Research Inc.

research, exploring whether life on Earth really did come from out of this world — on comets that contained complex prebiotic materials, such as amino acids and peptides (chains of amino acids), which are some of the most basic building blocks of life on Earth.

[Read more](#)

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This simulation depicts a comet hitting the young Earth, generating the amino acids necessary for life.

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IBM, along with NVIDIA and two DOE national laboratories, announces a pair of Centers of Excellence for supercomputing — one at LLNL and the other at Oak Ridge National Laboratory.

[Read more](#)

A Lawrence Livermore team receives an additional \$1 million to protect algal crops by developing “probiotic” bacteria to combat pond infestation and increase ecosystem function and resilience.

[Read more](#)

By tightly integrating experimental and theoretical techniques, an LLNL team provides fundamentally new insights into the specific factors that determine the absorption characteristics of copper complexes.

[Read more](#)

Physics of Plasmas releases its list of the most-cited papers for January-June 2015. Out of the 30 most-cited papers on the list, the top five contain lead authors from Lawrence Livermore. No. 8, 9 and 17 on the list also are led by LLNL, for a total of eight — more than any other institution on the list.

[Read more](#)

2015 Quotables

“The timing of Earth’s core formation can only be determined via chemical signatures in Earth’s mantle, a technique that requires assumptions about how well the iron is mixed. This new information actually changes our estimates for the timing of when Earth’s core was formed.”

- LLNL scientist Richard Kraus

People

Dan Burns, a science teacher at Los Gatos High School and instructor in LLNL’s summer Fusion and Astrophysics Research Academy, is one teacher who takes experiential learning to a whole new level. While most teachers spend



LLNL chemist Clark Souers has collected stamps his whole life. In his youth, he came across stamps from so-called dead countries, which ignited a lifelong interest in the story of what happened to the world after World War I. This fascination resulted in his published book, "Chaos and Identity: From World War I to Today."

their summer taking a break or going on vacation, Burns starts his off with the SOFIA Airborne Astronomy Ambassador program aboard a Boeing 747 jumbo jet with NASA's SOFIA (stratospheric observatory for infrared astronomy) infrared observatory.

[Read more](#)

After a lifelong interest in WWI, Lab chemist Clark Souers publishes his project, "Chaos and Identity: From World War I to Today."

[Read more](#)

Kim Budil, vice president for the Office of the National Laboratories at the University of California Office of the President and Executive Committee governor on the LLNS Board of Governors, leads an open discussion with LLNL's Women in Science and Engineering group.

[Read more](#)

During a visit to LLNL, Under Secretary of State for Arms Control and International Security Rose Gottemoeller thanks Laboratory employees for their contributions to national security.

[Read more](#)

Linton Brooks, former head of the National Nuclear Security Administration, speaks to Lab employees about U.S.-Russia relations and arms control.

[Read more](#)

2015 Quotables

"It was a great opportunity to be exposed to the cutting-edge technology and research being conducted not far from where I live. Ultimately, the trip motivated me to continue on with my engineering degree with the mindset of creating technologies that benefit the world and those in it."

- Didier "DJ" Mponde, an electrical engineering student at Sacramento State University

National Nuclear Security Administration Deputy Associate Administrator of Infrastructure Ken Sheely visits the Laboratory for tours and briefings on facilities.

[Read more](#)

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Linton Brooks, who was NNSA's administrator from May 2003 to January 2007, speaks to Lab employees about U.S.-Russia relations and arms control.

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Patricia Falcone, the new deputy director for Science and Technology, leads a candid discussion at the Laboratory Women's Association's Women in Science and Engineering (WISE) meeting.

[Read more](#)

Industrial Partnerships Office Director Rich Rankin joins area business leaders for a panel discussion on the "State of the Tri-Valley."

[Read more](#)

In a Director's Distinguished Lecturer Series presentation entitled "Making Life: The Art & Science of Robots," Genevieve Bell discusses her work for Intel to better understand how people interact with technology and humans' long-standing fascination with "bringing objects to life."

[Read more](#)

Operations

LLNL, in partnership with Lawrence Berkeley National Laboratory and Sandia National Laboratories/California, is awarded \$4.15 million by the Department of Energy to jointly launch a new small business voucher pilot.

[Read more](#)

Nine LLNL scientists participate in the Comprehensive Nuclear-Test-Ban Treaty

2015 Quotables

"The Stockpile Stewardship Program helps ensure that until the day of [global nuclear weapon] elimination comes, we can be confident that our stockpile will be safe and effective and reliable, and that's what's critical to deterrence. Because we no longer have to conduct the [nuclear] explosive tests, we're able to build an even more compelling set of arguments on behalf of U.S. approval of the Comprehensive Test Ban Treaty."

*- John Kerry, U.S. secretary of State,
at 20th anniversary event for SSP*

Science and Technology 2015 Conference held in Vienna, Austria.

[Read more](#)



The Lawrence Livermore National Laboratory-designed Network Mapping System collects data by watching and probing a network. It runs on dedicated computer hardware to maintain performance on the network being scanned and to provide a platform for follow-on analysis.

Five local high school seniors from Livermore and Tracy are awarded Lawrence Livermore's prestigious Edward Teller Science Scholarship.

[Read more](#)

Government agencies, along with state and local governments, could receive a helping hand from a computer network security tool developed by LLNL computer scientists and engineers. The software-based technology, known as the Network Mapping System, is licensed to Cambridge Global Advisors, a Washington, D.C.-area strategic advisory firm.

[Read more](#)

The Lab's Teacher Research Academy 2015 summer series kicks off with more than 50 science teachers committing their summer breaks to professional development and networking with other like-minded faculty.

[Read more](#)

The Defense Science Study Group — a two-year program of education and study that introduces outstanding science and engineering professors to the United States' security challenges and encourages them to apply their talents to these issues — visits the Lab.

[Read more](#)

Global Security takes its scientists, technology and equipment to the Central Cafe to show students and postdocs the kinds of cutting-

2015 Quotables

"As an organization that is pushing the limits on generative design and high-performance computing, Autodesk is an ideal collaborator as we investigate next-generation manufacturing. With its extensive cross-industry customer base, Autodesk can help us examine how our foundational research in architected materials and new additive manufacturing technology might transfer into a variety of domains."

- Engineering Associate Director Anantha Krishnan, about the Lab agreement with Autodesk

edge science the directorate does to support national security.

[Read more](#)

The Laboratory announces the referral bonus program for certain positions.

[Read more](#)

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A conception of the Jupiter-like exoplanet, 51 Eri b, seen in the near-infrared light that shows the hot layers glowing through clouds. Because of its young age, this young cousin of Jupiter is still hot and carries information on the way it was formed 20 million years ago.

AUGUST

Science and Technology

In a successful example of international research collaboration, a team of scientists from LLNL and the Russian Federal Nuclear Center-All-Russian Research Institute of Experimental Physics expose the strength of beryllium at extreme conditions.

[Read more](#)

In recent experiments, a team of scientists from LLNL and the University of California, Los Angeles reveal never-before-seen electron ring formations in addition to typically observed beams.

[Read more](#)

For the first time, Lawrence Livermore scientists, as part of an international team, discover the most Jupiter-like planet ever seen in a young star system, providing clues to understanding how planets formed around the sun.

[Read more](#)

Researchers from Lawrence Livermore and Autodesk join forces to explore how design software can accelerate innovation for three-dimensional printing of advanced materials.

[Read more](#)

The National Ignition Facility fires its 300th laser target shot in fiscal year 2015, meeting the year's goal more than six weeks early. In comparison, the facility completed 191 target shots in FY14.

[Read more](#)

2015 Quotables

“By allowing the methodology to consider shallow, uncontained events just below, at, or even above the Earth’s surface, we make the method relevant to new classes of events including mining events, military explosions, industrial accidents, plane crashes or potential terrorist attacks. A yield estimate is often very important to investigators and governmental agencies seeking to understand the precise cause of an explosion.”

- Lab researcher Michael Pasyanos

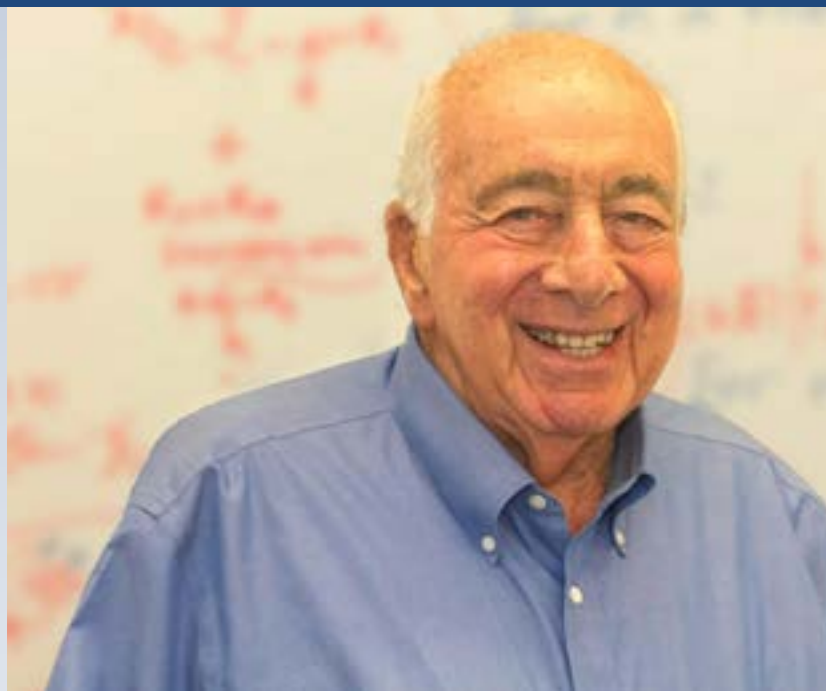
Livermore researchers find that nanocrystalline materials do not necessarily resist radiation effects in nuclear reactors better than currently used materials.

[Read more](#)

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Lawrence Livermore scientist Berni Alder celebrates his 90th birthday and his 60th anniversary at the Laboratory. He still comes into the Laboratory twice a week.

Astronomers find evidence for a faded electron cloud “coming back to life,” much like the mythical phoenix, after two galaxy clusters collided.

[Read more](#)

People

Father of molecular dynamics, Berni Alder, celebrates his 90th birthday and 60th anniversary working at the Laboratory.

[Read more](#)

Robert Work, deputy secretary of Defense, and Frank Kendall, undersecretary of Defense for Acquisition, Technology and Logistics, visit Lawrence Livermore to learn more about the Lab’s programs in areas of critical importance to the Department of Defense.

[Read more](#)

Brad Roberts joins LLNL to take the helm of the Center for Global Security Research.

[Read more](#)

State Sen. Steve Glazer and members of his capitol and district office staffs visit the Laboratory for briefings and tours.

[Read more](#)

Capt. Lauren Hamlin, a Sacramento native who traveled around the world as she rose through the ranks of the U.S. Army Medical Service Corps, finds herself back at Lawrence Livermore in the Army Fellows Program.

[Read more](#)

2015 Quotables

“My predecessors mainly focused on environmental projects, but I would like to learn more about business processes. At the Lab, I can take advantage of the institution’s pairing of science and business, and in turn, contribute to the Lab’s needs to help further its mission.”

*- Capt. Lauren Hamlin,
about participating in the Army Fellows Program*

Anne Harrington, deputy administrator for Defense Nuclear Nonproliferation for the National Nuclear Security Administration, visits the Laboratory for a series of briefings and tours.

[Read more](#)

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From left: Students Danielle Butts, Jasmine Bowers and Elijah Williams participate in the Cyber Defenders summer internship program at Lawrence Livermore National Laboratory.

Operations

Lawrence Livermore experts discuss the rise of computing during the 7th Annual Innovation Forum.

[Read more](#)

More than 250 students and faculty participate in the 2015 Student Poster Symposium, making it the largest to date.

[Read more](#)

LLNL and Sandia host this year's California Council on Science & Technology Policy Fellows for a day of briefings and tours.

[Read more](#)

Now in its sixth year, Cyber Defenders "boot camp" prepares students for mission-critical roles in the wake of the OPM breach.

[Read more](#)

Lawrence Livermore officials meet with energy industry representatives to discuss ways in which the two entities can work more closely.

[Read more](#)

With access to the Computation Directorate's faster-than-a-speeding-bullet, more-powerful-than-a-locomotive high-performance computing systems, 20 interns come to Livermore to learn about and work on significant data science problems.

[Read more](#)

2015 Quotables

"Our goal is to accelerate innovation, reduce the time to bring clean energy technologies to market and introduce efficiencies to energy manufacturing processes."

*- Peg Folta,
LLNL director for HPC4Mfg*

Computation's Institute for Scientific Computing Research welcomes 165 summer scholars from 97 universities in nine countries — the largest group yet.

[Read more](#)

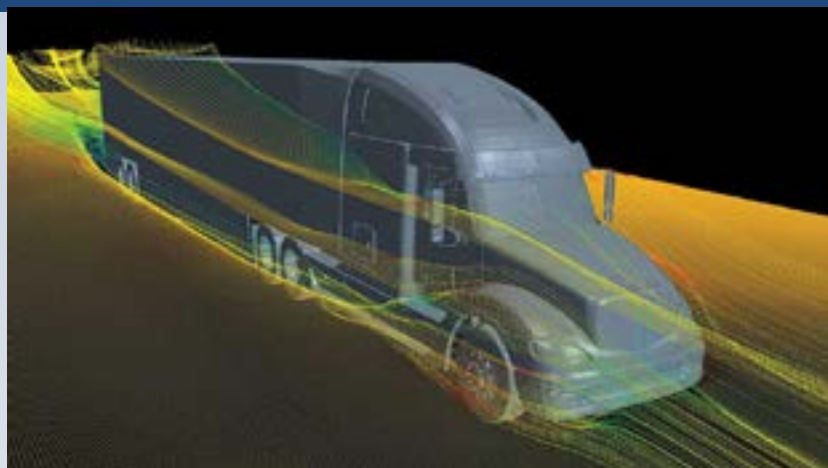
Summer students attend a panel discussion with eight women representing varying educational levels and career stages, sponsored by the Laboratory Women's Association's Women in Science and Engineering group.

[Read more](#)

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This computer simulation of aerodynamic drag on a tractor trailer was conducted as part of a DOE study to reduce the fuel consumption of trucks. A new initiative will allow industry to leverage the high performance computing capabilities of the national labs to advance clean energy manufacturing technologies.

Some 200 protesters hold a rally at the corner of Vasco and Patterson Pass roads to mark the 70th anniversary of Hiroshima Day.

[Read more](#)

LLNL celebrates the 50th anniversary of the Intelligence Programs with a panel discussion of distinguished national intelligence community members, a look at the intelligence program by Lab speakers, a poster session and reception.

[Read more](#)

LLNL's Engineering Directorate and the Industrial Partnerships Office host a workshop by Singularity University, which brings together large organizations, emerging start-ups and entrepreneurs to take on some of humanity's grand challenges.

[Read more](#)

Departments of Defense and Energy and NNSA labs celebrate the 30th anniversary of the Joint Munitions Program.

[Read more](#)

Responsibility for the Laboratory's Information and Communication Services transitions from the Operations and Business Principal Directorate to the Computation Directorate.

[Read more](#)

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2015 Quotables

"Livermore exists to solve complex problems and to deliver solutions for national security, a great many of which involve high performance computing."

- Fred Streitz,
director of LLNL's High Performance Computing
Innovation Center (HPCIC)

SEPTEMBER

Science and technology

Lawrence Livermore geologist Rick Ryerson and international colleagues publish new findings about Earth's core and mantle by considering their geophysical and geochemical signatures together.

[Read more](#)

Lawrence Livermore and RPI announce that they will combine decades of expertise to help American industry and businesses expand use of high



A rigger scales the Laboratory's cargo container stack testbed as part of a radiation detector exercise that involved five laboratories and one private company.

NOTE

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performance computing under a memorandum of understanding.

[Read more](#)

The Department of Energy announces a new initiative that allows industry to leverage the high performance computing capabilities of Lawrence Livermore, Oak Ridge and Lawrence Berkeley national laboratories to advance clean energy manufacturing technologies.

[Read more](#)

Researchers from five laboratories, including LLNL, and a private company spend two days in blistering 100 degree heat testing radiation detection technologies amidst cargo containers.

[Read more](#)

A multi-institutional team of scientists fires the 26th and final shot of the Pleiades experimental campaign at the National Ignition Facility. The campaign creates a new scientific foundation for the study of supersonic radiation flow in astrophysical phenomena and in inertial confinement fusion physics.

[Read more](#)

The Department of Energy approves the start of construction for a 3.2-gigapixel digital camera — the world's largest — for the Large Synoptic Survey Telescope. The Lab plays a key role in the LSST project.

[Read more](#)

2015 Quotables

“American manufacturers have gained confidence that natural gas prices will stay low for the long term, and have invested in equipment to switch from oil to natural gas feedstocks and fuels.”

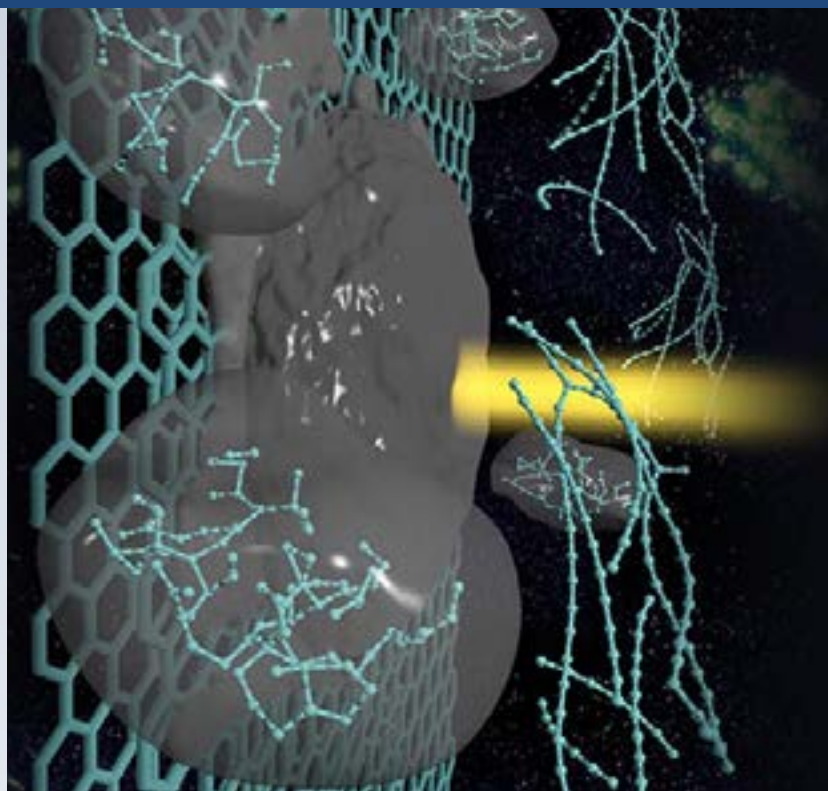
*- A.J. Simon,
LLNL's energy group leader*

Livermore engineer Mihail Bora receives \$570,000 through the Department of Energy SunShot Initiative to explore spectroscopic technology as a means of detecting moisture buildup in solar photovoltaic cells.

[Read more](#)

Research showing how carbon might boost nanoelectronics is published in the *Journal of Physical Chemistry*.

[Read more](#)



A carbyne strand forms in laser-melted graphite. Carbyne is found in astrophysical bodies and has the potential to be used in nanoelectronic devices and superhard materials.

LLNL researchers announce that a National Ignition Facility experimental campaign may have unlocked the scientific secrets behind how hydrogen becomes metallic at high pressure.

[Read more](#)

Livermore scientists report that they have come up with a theory that may explain why dark matter has evaded direct detection in Earth-based experiments.

[Read more](#)

Livermore Graduate Scholar Marco Keiluweit and LLNL scientist Jennifer Pett-Ridge show that the long-term litter decomposition rate in forest ecosystems is tightly coupled to manganese redox cycling.

[Read more](#)

People

The odds aren't astronomical; in fact, they're almost a certainty, according to NASA Chief Scientist Ellen Stofan, who gave a Director's Distinguished Lecturer Series talk at the Lab about the ongoing search for extraterrestrial life.

[Read more](#)

Kathy Baker, the Laboratory's chief financial officer, dies following injuries sustained in an accident.

[Read more](#)

Gen. Paul Selva, vice chairman of the Joint Chiefs of Staff, visits the Laboratory for tours and discussions.

[Read more](#)

2015 Quotables

"It's sort of a carbon credit because the phytoplankton are making their own nitrogen-based fertilizer out of dissolved nitrogen."

- LLNL geochemist Tom Guilderson, referring to research about climate change affecting plankton

Philip Calbos, principal assistant deputy administrator for Defense Programs for the National Nuclear Security Administration, visits the Lab.

[Read more](#)

Longtime Laboratory astrophysicist Claire Max shifts her focus to a new frontier when she is appointed director of the University of California Observatories.

[Read more](#)

Native American students visit the Lab as part of an inter-tribal energy and tech tour.

[Read more](#)

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Pat Falcone, Lab deputy director for Science and Technology, speaks at the Laboratory Women's Association's 44th annual membership and scholarship fundraising luncheon.

San Joaquin County Supervisor Bob Elliott visits the Lab.

[Read more](#)

More than 160 women and men gather at Concannon vineyards for the Laboratory Women's Association's 44th annual membership and scholarship fundraising luncheon to hear keynote speaker, Pat Falcone, Lab deputy director for Science and Technology.

[Read more](#)

Andy Weir, author of "The Martian," talks at the Lab about his book and the movie.

[Read more](#)

Operations

The directors of DOE national labs convene a workshop in Livermore to share ideas, insights and best practices aimed at enhancing diversity and inclusion at their institutions.

[Read more](#)

The Lawrence Livermore Postdoc Association council meets with Pat Falcone, deputy director for Science and Technology, to address general postdoc concerns.

[Read more](#)

LLNL's Site 300 experimental test site celebrates its 60th anniversary.

[Read more](#)

2015 Quotables

"It's like some kind of cosmic circle. Now I get to be escorted by my son and introduced as Andy Weir's dad."

- Former Lab employee and author Andy Weir's father, John Weir, on attending his son's LLNL presentation

Employees now enjoy the benefit of continuous Internet access throughout their entire work day. Livermore Information Technology extends the log-in period for Internet access from six to 12 hours, with a hard reset occurring at 7 p.m. daily.

[Read more](#)

The Livermore Laboratory Employee Association's Microcentury Toastmasters networking group celebrates its 50th anniversary.

[Read more](#)

SHRM, LLESA and the Lawrence Livermore Postdoc Association co-host "The PHD Movie 2: Still in Grad School," a sequel to the independently produced movie based on PHD Comics, about life (or the lack thereof) in academia.

[Read more](#)

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Lawrence Livermore National Laboratory scientists were part of an international team that discovered five new nuclei: U 218, Np 219, Bk 233, Am 223 and Am 229.

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As approved by the Institutional Operations Review Board, Project Management, Engineering, & Construction (PMEC) begins certifying non-PMEC (satellite) construction managers and project managers to the PMEC standards and expectations.

[Read more](#)

Lab employees attend the Cybersecurity Program's annual National Cybersecurity Awareness Month Cybersecurity Fest at the Livermore Valley Open Campus.

[Read more](#)

OCTOBER

Science and technology

Lawrence Livermore scientists, in conjunction with international researchers, announce the discovery of five new atomic nuclei to be added to the chart of nuclides.

[Read more](#)

The Laboratory announces the awarding of a subcontract to Penguin Computing — a leading developer of high-performance Linux cluster computing systems — to bolster computing for stockpile stewardship at the three national security laboratories.

[Read more](#)

More than 60 representatives from the national labs, private industry, local counties and municipalities and universities meet at

2015 Quotables

“In nuclear forensics, we want to know first, is someone able to put together the parts to make a nuclear weapon and set it off? And second, if one is set off, can we find out who did it, how they did it and are they going to do it again?”

- LLNL nuclear chemist Dawn Shaughnessy, who leads the experimental and nuclear radiochemistry group in the Physical and Life Sciences Directorate

the Laboratory to discuss new manufacturing technologies at the California Network for Manufacturing Innovation's 3rd Annual Smart Manufacturing conference.

[Read more](#)

General Electric, Lawrence Livermore and Oak Ridge National Laboratory announce that they have created new kinds of fluorescent lighting phosphors that use far less rare-earth elements than current technology.

[Read more](#)



Dorothy Rothrock, president of the California Manufacturers & Technology Association, was the keynote speaker at the Laboratory's California Network for Manufacturing Innovation's 3rd Annual Smart Manufacturing conference.

As part of a tri-lab consortium, Laboratory researchers agree to develop tools and understanding necessary for designing new solid-state materials for storing hydrogen gas.

[Read more](#)

LLNL scientist Michael Hohensee and colleagues publish findings showing that the properties that make rare-earth elements so useful also make them great probes of physics beyond the Standard Model.

[Read more](#)

In a series of papers, Laboratory scientists examine the role of ablation-front instability and capsule convergence ratio in ignition science experiments at the National Ignition Facility.

[Read more](#)

New research by Lawrence Livermore, UC Berkeley, the University of Oklahoma, Lawrence Berkeley National Laboratory and the Samuel Roberts Noble Foundation looks into whether switchgrass cultivation could result in an enhancement of key ecosystem services such as carbon sequestration, soil fertility and biodiversity.

[Read more](#)

About 100 scientists, engineers, computer scientists and physicians participate in a two-day meeting in Monterey to explore how high performance computing can provide important benefits for medicine. LLNL researchers are among the participants.

[Read more](#)

2015 Quotables

"The type of work we engaged in and the education we received was very helpful."

- Andy John,
a situational awareness unit leader
for the Federal Emergency Management Agency
National Incident Management
Assistance Team West

A team of LLNL scientists, for the first time, presents a parameter-free first-principles model for the lattice vibrations in the delta-phase of plutonium.

[Read more](#)

People

Teresa Nightengale is appointed acting chief financial officer.

[Read more](#)

John Cabeca, director of the soon-to-open Silicon Valley U.S. Patent and Trademark Office (USPTO), pays a short visit to the Laboratory.

[Read more](#)

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Anna Maria Bailey, LLNL high performance computing facility manager, with the Cab supercomputer that will be retrofitted with liquid cooling in January.

NOTE

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LLNL's Seth Bromberger is one of the speakers at a two-day conference, the California Cyber Security Symposium 2015, held at the Sacramento Convention Center.

[Read more](#)

Joanna Albala, manager of the Laboratory's Science Education Program and Erin McKay, a biology and biotechnology teacher at Tracy High School, who also teaches in the summer Teacher Research Academies at the Lab, represent the Laboratory at the California Science Teachers Association Conference in downtown Sacramento.

[Read more](#)

NOVEMBER 2015

Science and Technology

Two LLNL scientists are part of a scientific team that is chosen as one of five finalists for a possible NASA Discovery Program mission for a proposal to explore a metallic asteroid.

[Read more](#)

Lawrence Livermore scientists find that lithium ion batteries operate longer and faster when their electrodes are treated with hydrogen.

[Read more](#)

Supercomputers at Lawrence Livermore will be retrofitted with liquid cooling systems under a California Energy Commission grant to assess potential energy savings.

[Read more](#)

2015 Quotables

"I enjoy the collaborative environment. It allows us as interns to have the opportunity to brainstorm amongst ourselves and develop ideas and strategies to solve real-world problems."

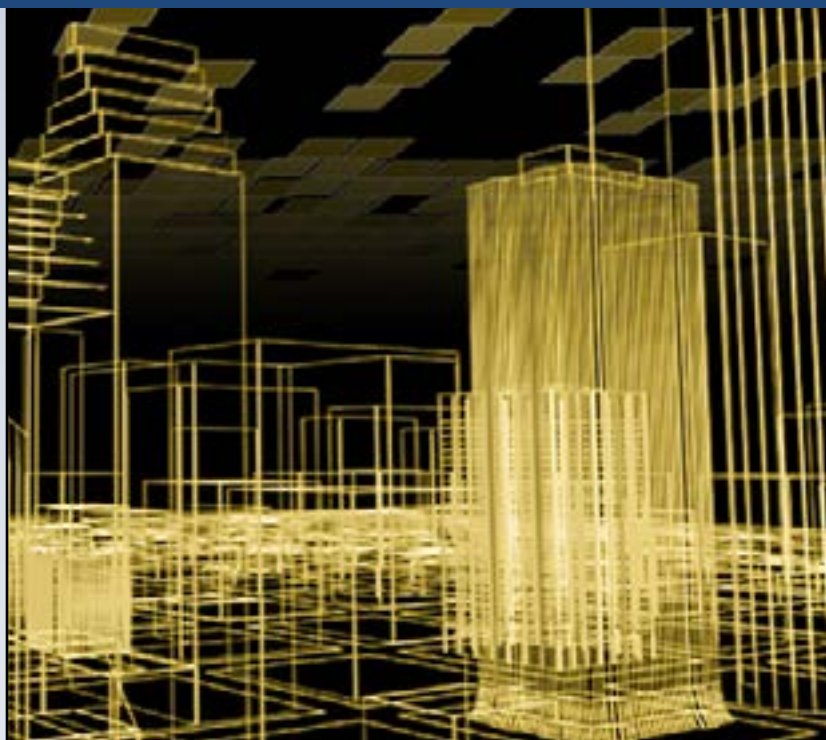
- Jasmine Bowers, computer science intern and doctoral student from the University of Florida

The DOE/NNSA and its three national labs reach an agreement with NVIDIA's PGI® software to create an open-source Fortran compiler designed for integration with the widely used LLVM compiler infrastructure.

[Read more](#)

Scientists from Lawrence Livermore, in collaboration with researchers from University of California campuses at Merced and Davis, find that a specific secreted protein inhibits prostate cancer metastasis to bone.

[Read more](#)



Lawrence Livermore National Laboratory partners with Rensselaer Polytechnic Institute to focus on scientific and engineering software applications capable of running on HPC platforms.

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Using a tabletop-sized ion-trap apparatus, Lawrence Livermore scientists make the first improvement in more than 50 years on a type of particle interaction involving neutrinos emitted in radioactive decays.

[Read more](#)

People

Lassina Zerbo, the executive secretary of the Preparatory Commission for the Comprehensive Test Ban Treaty Organization, visits the Laboratory for briefings and tours. He discusses the work LLNL does in support of the organization.

[Read more](#)

Veteran interns get a taste of “dream” jobs at LLNL in a two-year program with Las Positas that provides veterans with the opportunity to earn a summer internship at the Lab and perhaps, a foot in the door to an engineering career.

[Read more](#)

Mark Perjanik, a longtime Laboratory employee working as a coordinator for the Weapons and Complex Integration Principal Directorate, volunteers as a Patriot Guard Rider, a nationwide nonprofit organization whose primary goal is to ensure dignity and respect at memorial services honoring fallen military heroes, first responders and honorably discharged veterans.

[Read more](#)

LLNL materials scientist Troy Barbee Jr., whose ties as a student, researcher and alumnus with

2015 Quotables

“It’s not about me, it’s about them.”

*- Mark Perjanik,
who volunteers for the Patriot Guard Riders*

Stanford University span six decades, is one of four Stanford graduates inducted into the university’s Multicultural Alumni Hall of Fame.

[Read more](#)

Kenneth Turteltaub is named a fellow of the American Association for the Advancement of Science.

[Read more](#)

Dan Knight, deputy associate director for Engineering Operations, devotes his time and resources to Shepherd’s Gate, a nonprofit organization providing a vital safety net for the Tri-Valley’s homeless population.

[Read more](#)

Livermore City Manager Marc Roberts meets with employees to discuss the city’s effort to bring BART to Livermore as well as connect BART to the ACE train. Roberts positions Livermore, along with



UC President Janet Napolitano and Sandia National Laboratories Director Jill Hruby participate in a “fireside chat” during a leadership summit.

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the Tri-Valley, as a growing “economic engine” for the Bay Area as well as a feeder into key Bay Area destinations.

[Read more](#)

Lawrence Livermore employee Alex Bodan volunteers for the Missing Man Ministry, a group that provides assistance to widows and orphans.

[Read more](#)

John MacWilliams, associate deputy secretary of the Department of Energy, visits Lawrence Livermore for tours and discussions.

[Read more](#)

Laboratory scientists and engineers from Global Security’s Energy Program and the Physical and Life Sciences’ Atmospheric, Earth and Energy Division present their work on energy, climate and geosciences to their peers in a poster showcase at the Central Cafe.

[Read more](#)

University of California President Janet Napolitano visits the Lab for a “fireside chat,” hosted by Lab Director Bill Goldstein and facilitated by Sandia National Laboratories Director Jill Hruby, as part of a daylong leadership team meeting of the two labs.

[Read more](#)

Six Lab employees receive new or upgraded FCC ham radio licenses.

[Read more](#)

2015 Quotables

“I thought about what they are doing and I felt it was something in which I wanted to become involved.”

*-Lab employee Alex Bodan,
who volunteers for the Missing Man Ministry,
a group that provides assistance to widows and orphans*

Will Durst, political satirist and an award-winning, nationally acclaimed columnist and well-known comedian, returns to the Laboratory with an entertaining stand-up comedy routine.

[Read more](#)

Operations

The Lab participates in the San Francisco Bay Area Science Festival’s Discovery Day at AT&T Park for a day of hands-on experiments, exhibits, games and shows.

[Read more](#)

LLNL’s success in moving technology to the marketplace takes center stage at the Eisenhower



The 12th annual Veterans Day Lab Ride brought more than 70 motorcycles and 90 people out for the trip from LLNL to Site 300 to benefit local charities.

Executive Office Building in Washington, D.C. as senior Lab officials join other national laboratories, White House officials and universities for the Forum on Connecting Regional Innovation Ecosystems to Federal and National Labs.

[Read more](#)

Employees come out in droves to enjoy the sunny weather, decked out in creative costumes, ready to “Run for HOME,” at the celebratory kickoff to the 2015 HOME Campaign.

[Read more](#)

The Health Services Department holds its “Fall Into Health” wellness drop-in clinic at the Central Cafe. Employees get free flu shots and fingerstick assessments.

[Read more](#)

For this year’s annual chemical inventory, ChemTrack turns to Radio-Frequency Identification Technology for tracking hazardous chemicals.

[Read more](#)

A new version of Cheetah, a thermochemical code developed at Lawrence Livermore’s Energetic Materials Center that aims to provide accurate performance results for existing, newly synthesized/developed and even hypothetical compounds and explosive, is released.

[Read more](#)

The 12th annual Veterans Day Lab Ride brings more than 70 motorcycles and 90 people out to

2015 Quotables

“It was amazing. Biosecurity is not a large field and the program featured a real ‘who’s who’ of the people who work in it.”

*- Jeff Drocco,
upon being named a biosecurity fellow*

join in the procession, from LLNL to Site 300, to benefit local charities.

[Read more](#)

The 2015 Helping Others More Effectively (HOME) Campaign surpasses the \$1 million mark.

[Read more](#)

The Internal Revenue Service recently announces the maximum contribution limits to the 401(k) plan will not be changed for 2016.

[Read more](#)

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Kermit "Tim" Enander, left, and George Retelas answer questions from the audience after the screening of the WWII documentary "Eleven."

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Construction of a solar electric generation system on the Lab's northwest buffer zone begins in mid-November.

[Read more](#)

As a mark of respect for the victims of the acts of violence on Nov. 13 in Paris, France, the U.S. flag at LLNL is flown at half-staff until sunset, Nov. 19.

[Read more](#)

The new Cisco phone service converts employee phone line to Voice-over-IP technology, which operates over the data network instead of traditional phone lines. Deployment of this new service is the final phase of the LivConnected initiative, managed by Livermore Information Technology.

[Read more](#)

More than 100 employees attend the special Laboratory screening of the WWII documentary "Eleven" in honor of Veterans Day. "Eleven" is a film by George Retelas about 11 surviving members of the USS Hornet's Carrier Air Group 11 (also known as the "Sundowners").

[Read more](#)

The Laboratory completes the 2014 Site Annual Environmental Report for both the main site and Site 300.

[Read more](#)

The 2015 East Bay Innovation Forum is held at Bishop Ranch in San Ramon. The forum brings

2015 Quotables

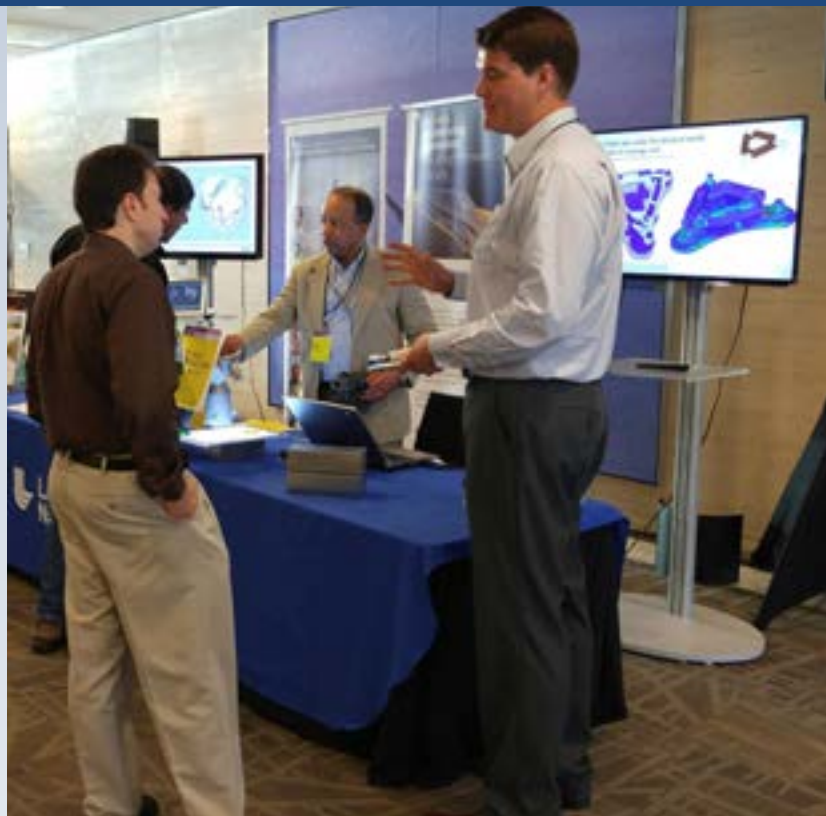
"This event honors a triumph of innovation and invention. It also pays tribute to the remarkable accomplishments of the literally thousands of scientists, technicians and engineers working within the nuclear security enterprise who turned a vision into a reality."

*- Lt. Gen. Frank Klotz,
administrator of NNSA,
at 20th anniversary event for SSP*

together local investors, entrepreneurs and innovators under one roof to talk about advancing technology in the Tri-Valley.

[Read more](#)

Nearly 50 employees attend the Lawrence Laboratory Women's Association's Women in



Lab Engineer Will Elmer, right, shows off a 3D printed diesel engine part and discusses Simrev, a supercomputer modeling software he developed at the Lab.

NOTE

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Science and Engineering group meeting with Lab Director Bill Goldstein.

[Read more](#)

Laboratory employees begin to receive letters from the Office of Personnel Management informing them that they are potential victims of a massive security breach announced last summer in which as many as 25 million federal and contract employees were impacted.

[Read more](#)

The Laboratory receives DOE approval for the CY 2016 Compensation Increase Plan. Final preparations are under way to commence the CY 2016 Salary Review process.

[Read more](#)

DECEMBER

Science & Technology

New research by Lawrence Livermore National Laboratory and colleagues at the University of California, Santa Cruz, University of Colorado and Universität zu Kiel in Germany, find that there are distinct differences in how plankton respond to climate over the last 1,000 years.

[Read more](#)

The full power of Lawrence Livermore's Sequoia supercomputer plays a key role in the Earth mantle convection simulation by a University of Texas-led team that won the 2015 Gordon Bell

2015 Quotables

"American manufacturers have gained confidence that natural gas prices will stay low for the long term and have invested in equipment to switch from oil to natural gas feedstocks and fuels."

- A.J. Simon,
LLNL's energy group leader

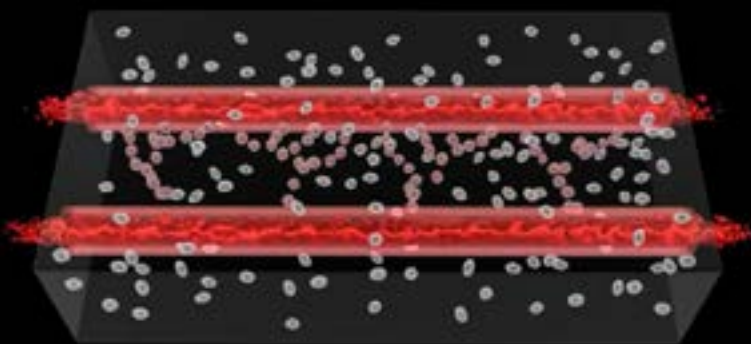
Prize, announced at this year's Supercomputing Conference (SC15).

[Read more](#)

Lawrence Livermore researchers and collaborators find that most climate models overestimate the increase in global precipitation due to climate change.

[Read more](#)

Lab climate and computational scientists descend in Monterey, California, to attend and participate



Researchers at Lawrence Livermore say the precision and 3D structures made possible through bioprinting are enabling them to more effectively reproduce human physiology outside of the body, which will lead to a better representation of each tissue system that makes up the human body.

in the fifth annual interagency face-to-face (F2F) Earth System Grid Federation (ESGF) conference.

[Read more](#)

Using a 3D printer and a “bio-ink” made of materials compatible with the human body, a Lawrence Livermore team successfully prints structures with living cells and biomaterials. The material and environment are engineered to enable small blood vessels, human capillaries, to develop on their own.

[Read more](#)

Through 3D printing, a team of scientists and engineers at Lawrence Livermore and Harvard University find that the architecture can play a strong role in exerting more control over the energy release rate of reactive composites.

[Read more](#)

The International Union of Pure and Applied Chemistry confirms that Lawrence Livermore National Laboratory scientists and international collaborators have officially discovered elements 115, 117 and 118. The announcement means those three elements are one step closer to being named.

[Read more](#)

Lawrence Livermore scientists create a new method for detecting and analyzing fission chains to assess and evaluate nuclear material.

[Read more](#)

2015 Quotables

“It’s going to change the way we do biology. This technology can take biology from the traditional petri dish to a 3D physiologically relevant tissue patch with functional vasculature.”

*- Monica Moya,
on 3D printing for ‘living’ blood vessels*

Researchers from the Large Underground Xenon (LUX) dark matter experiment, which include several from Lawrence Livermore’s Rare Event Detection Group, re-examine data collected during LUX’s first experimental run in 2013, and help to rule out the possibility of dark matter detections at low-mass ranges where other experiments had previously reported potential detections.

[Read more](#)

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Lawrence Livermore National Laboratory engineer Bryan Moran has created a printer that projects an image onto a liquid resin that hardens when hit by light in order to create 3D objects.

NOTE

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People

Darlene Yazzie, a facility coordinator in the Operations and Business Directorate's Facility Management Division, focuses her attention on the Inspire Learning Institute, an outreach organization dedicated to providing science, technology, engineering and mathematics education to economically depressed communities and underserved, underprivileged and at-risk youth in Contra Costa County.

[Read more](#)

Jennifer Gibson-Greenwood, a Lab employee who is a financial manager for the Global Security Principal Directorate, serves on HOPE Ministries' nine-member board of directors.

[Read more](#)

Lawrence Livermore Lab engineer Bryan Moran creates a new take on a process called projection micro-stereolithography, which uses UV light to create 3D objects. He wins a coveted R&D 100 award for his work.

[Read more](#)

Dan Patterson is one of the world's foremost nuclear weapons designers during his 60 years of service.

[Read more](#)

Robbee Kosak, president of the Hertz Foundation, visits the Laboratory for meetings and tours.

[Read more](#)

2015 Quotables

"It's been great. I think I'll go for another 60."

— Dan Patterson,
on his 60-year career at the Laboratory

Nobel Prize winner and UC Santa Barbara professor Shuji Nakamura discusses pioneering work in LEDs during a Director's Distinguished Lecturer Series talk.

[Read more](#)

Lt. Gen. Frank Klotz, the Department of Energy's under secretary for Nuclear Security and administrator for the National Nuclear Security Administration, visits the Laboratory for briefings and tours.

[Read more](#)

Former senior manager Cherry Murray is confirmed by the Senate as the director of the Department of Energy's Office of Science.

[Read more](#)

Representatives from state Senate offices and



NNSA Administrator Lt. Gen. Frank Klotz answers questions during an all-hands talk held at the Laboratory.

committees visit the Lab for tours and briefings.

[Read more](#)

John Marchard, mayor of the City of Livermore, visits the High Explosives Applications Facility (HEAF) at the Laboratory at the invitation of Lara Leininger, director of the Lab's Energetic Materials Center.

[Read more](#)

Operations

Employees gather at the West and Central cafes for a holiday party hosted by Director Bill Goldstein.

[Read more](#)

To help employees save money on commuting costs, LLNS offers a pre-tax transportation benefit. With this benefit, all employees who commute to work by public transit (bus, rail or ferry) or vanpool can pay their fare with pre-tax dollars.

[Read more](#)

In early 2016, nearly all LLNL employees will receive at least one new IRS form as a result of Affordable Care Act provisions.

[Read more](#)

The Environmental Restoration Department's Summer Student Program influences the professional trajectories of participating students,

2015 Quotables

“These are people who live in and serve my community. . . and Livermore is a better place because of it. Having spent my career in the sciences, I recognize when others are passionate about their work. The people that I met are not only committed to the mission and to national security, but to their community as well.”

– Mayor John Merchand,
on his visit to the High Explosives Facility

but also contributes to workforce development across the Laboratory.

[Read more](#)

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2015 Quotables

“The thing about Shepherd’s Gate is that it’s a high-quality endeavor. You go on the grounds, you see the facilities, you observe the interactions and you can tell they strive to treat the women and children there with dignity. Many of the women come from abusive situations where they are continually told that they are worthless.”

- Engineering Deputy Director Dan Knight, who volunteers for Shepherd’s Gate, a nonprofit organization that was on this year’s HOME list

Lab employees can receive their 2015 for W-2 electronically.

[Read more](#)

NNSA announces successful completion of the FY2015 Level 1 Milestone on pit reuse. Based on critical evaluation by an external review committee, NNSA personnel determine that both Lawrence Livermore and Los Alamos national laboratories have satisfied all completion criteria for this milestone.

[Read more](#)

Laboratory employees, along with Lawrence Livermore National Security, LLC, raises \$3.2 million to give to charities within their surrounding communities.

[Read more](#)

The annual salary review process kicks off with the Manager’s Forum and is scheduled to continue through January.

[Read more](#)

Office of Personnel Management Chief of Staff Kevin Knobloch sends a letter stating that most of the 25.7 million individuals whose information may have been compromised have been notified.

[Read more](#)

LabList, a newly created website, is established to connect postdocs to staff scientists much like a Craigslist.

[Read more](#)

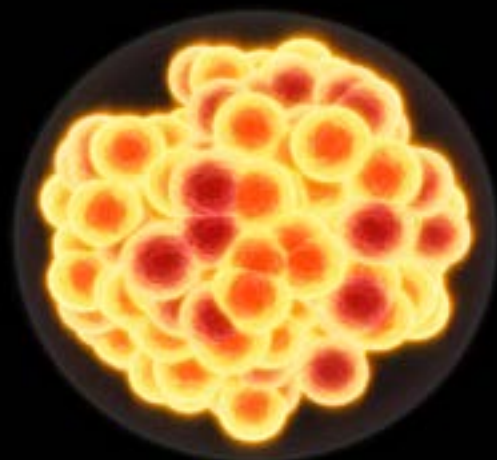


Illustration of element 117, which was officially added to the periodic table.

NOTE

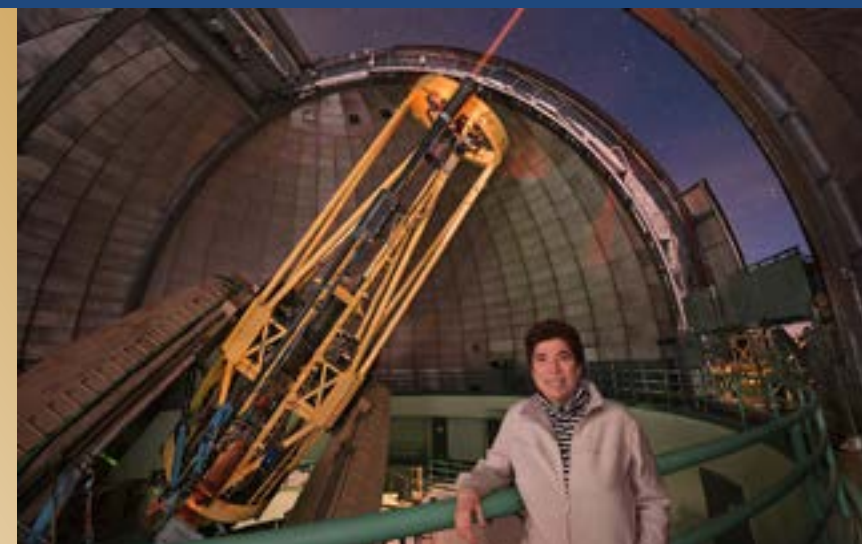
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RECOGNITION AND AWARDS



Claire Max, in front of the adaptive optics system at the Lick Observatory, is a leader in making near-diffraction-limited imaging possible on large ground-based telescopes. Photo courtesy of Laurie Hatch.



Lawrence Livermore researchers are the recipients of three awards among the top 100 industrial inventions worldwide for 2014.

[Read more](#)

The CORAL collaboration of Oak Ridge, Argonne and Lawrence Livermore that will bring the Sierra supercomputer to the Lab in 2018 is recognized by *HPCWire* with an Editor's Choice Award for Best HPC Collaboration between Government and Industry.

[Read more](#)

Palo Alto-based Cystic Fibrosis Research Inc. awards the 2015 Dave Stuckert Memorial Award to Lab Chief Electronics Engineer **Doug Modlin** for his more than 30 years of volunteering as a member of the CFRI Research Advisory Committee, including 10 years as chairperson, in addition to his past two years on the board of directors.

[Read more](#)

Ten Livermore scientists are selected as fellows of the American Physical Society, representing a wide selection of physics expertise.

[Read more](#)

Four former LLNL scientists and engineers are inducted into the Laboratory's Entrepreneurs' Hall of Fame.

[Read more](#)

A Laboratory effort to conserve energy and reduce costs by consolidating data centers receives a Sustainability Award from the U.S. Department of Energy.

[Read more](#)

Matthew Levy, Lawrence Scholar in the Physics Division at Lawrence Livermore, is awarded the prestigious Newton International Fellowship by the Royal Society of the United Kingdom.

[Read more](#)

Claire Max, a longtime astrophysicist at LLNL and a faculty member at UC Santa Cruz, earns the Joseph Weber Award for Astronomical Instrumentation from the American Astronomical Society for her work in adaptive optics.

[Read more](#)

A novel system developed by Lawrence Livermore and nine partners that enables climate researchers to solve their most complex data analysis and visualization challenges nets the team a Federal Laboratory Consortium award.

[Read more](#)

Edgar Leon, a computer scientist in the Livermore Computing Division, is elevated to the grade of Institute of Electrical and Electronics Engineers senior member.

[Read more](#)

RECOGNITION AND AWARDS



Jeff Drocco is named a biosecurity fellow and participates in the Emerging Leaders in Biosecurity Initiative program.



Ken Sperber, a climate scientist at Lawrence Livermore, is awarded the 2014 Editor's Citation for Refereeing for the *Journal of Geophysical Research Atmospheres*.

[Read more](#)

Félicie Albert, an experimental physicist at Lawrence Livermore, is selected by the American Physical Society as an outstanding referee for 2015. Outstanding referees are honored for their exceptional helpfulness in assessing manuscripts for publication in the *Physical Review* journals.

[Read more](#)

Jeff Drocco, a scientist and analyst with the Biodefense Knowledge Center at Lawrence Livermore, is named a biosecurity fellow and participates in the Emerging Leaders in Biosecurity Initiative program.

[Read more](#)

Laboratory employees **Craig Fish and Patrick Beck** are recognized for their service as members of Volunteers for Outdoor California V-O-Cal, a nonprofit

volunteer workforce that's committed to large-scale trail maintenance and construction projects, habitat restoration and related land stewardship activities on public lands in partnership with public agencies and other nonprofit organizations.

[Read more](#)

Representatives from the executive offices of Akima Infrastructure Services, which provides the majority of the supplemental labor for the Laboratory, presents a special award to the Lab in gratitude for education outreach to remote areas of Alaska.

[Read more](#)

Lawrence Livermore receives an award from the American Red Cross for consistently ranking as the top blood donor west of the Mississippi River.

[Read more](#)

The Global Security Principal Directorate holds its twice-yearly Gold Awards ceremony to recognize outstanding contributions and onetime achievements that are above and beyond the

demands of normal job performance.

[Read more](#)

Energy Secretary Ernest Moniz awards LLNL climate scientist **David Bader** a DOE Secretarial Honor Award for his leadership of the Accelerated Climate Modeling for Energy project.

[Read more](#)

Monica Moya, an early career biomedical engineer researcher in the Materials Engineering Division, is recognized with a Millennial Leader Award at the EmpowHer Institute's Rising Stars Awards event.

[Read more](#)

As the recipient of the Department of Energy Early Career Research Program (ECRP) award, Lawrence Livermore's **Yunyan Zhang**, a climate scientist in the cloud process group, receives \$2.5 million for research to improve the understanding of how soil moisture and surface diversity affect cloud formation and precipitation.

[Read more](#)

RECOGNITION AND AWARDS



Ian Hutcheon examines a piece of the meteorite Allende, which contains some of the oldest objects in the solar system. A new fellowship award has been established in honor of the late Hutcheon, who significantly advanced America's nuclear forensics capability.



Eleven LLNL researchers are named Distinguished Members of Technical Staff for their extraordinary scientific and technical contributions to the Laboratory and its missions.

[Read more](#)

Energy Secretary Ernest Moniz awards five LLNL scientists the DOE Secretarial Honor Award for their participation in the Office of Intelligence and Counterintelligence Analytic Team.

[Read more](#)

Renee Breyer, deputy associate director for the Strategic Human Resources Management Directorate at LLNL, is named an HR Rising Star for 2015 by *Human Resources Executive Magazine*.

[Read more](#)

Pierre Michel, a physicist at LLNL, is awarded the 2015 Edouard Fabre Prize for his pioneering research into energy transfer between crossing laser beams in National Ignition Facility hohlraums.

[Read more](#)

Miguel Morales is awarded the Museum of Science and Industry's National Early Career Hispanic Scientist of the Year for 2015.

[Read more](#)

Under a revamped awards process, all six of LLNL's entrants for this year's R&D 100 competition are chosen as finalists.

[Read more](#)

LLNL's **Annamarie Meike** is honored by *Intellectual Management Asset*, a London-based international journal, as one of the top 300 intellectual property strategists in the world.

[Read more](#)

Leon Berzins receives the NNSA Excellence Medal for the successful Source Physics Experiment 4 Prime campaign at the Nevada National Security Site.

[Read more](#)

The first **Dr. Ian Hutcheon Post-Doctoral Fellowship** award, to support research in

nuclear forensics as part of the Department of Homeland Security Domestic Nuclear Detection Office's National Nuclear Forensics Expertise Development Program, is established. The fellowship honors the late Hutcheon, who significantly advanced America's nuclear forensics capability during his 22-year tenure.

[Read more](#)

Director Bill Goldstein presents 13 teams (166 employees) with 2015 Director's Institutional Operational Excellence Awards.

[Read more](#)

We Be Dragon, the Livermore Laboratory Employee Services Association-sponsored dragon boat team, takes first place in their division at the 20th Annual Kaiser Permanente San Francisco International Dragon Boat Festival at Treasure Island.

[Read more](#)

RECOGNITION AND AWARDS



Annie Kersting is selected to receive the 2016 American Chemical Society's Francis P. Garvan-John M. Olin Medal for distinguished service to chemistry.



The Center for International and Strategic Studies and the national security community come together to honor **former LLNL Director John Foster** as he became the first recipient of the John S. Foster Jr. Medal.

[Read more](#)

Citing "huge successes" at the Lab in the past year, Director Bill Goldstein honors a team of more than 100 National Ignition Facility and Weapons and Complex Integration scientists and researchers, along with three other Lab employees, for their exceptional accomplishments in science and technology at the 2015 Director's S&T Awards.

[Read more](#)

Laboratory geochemist **Annie Kersting**, who serves as the director of the Lab's Glenn T. Seaborg Institute, is selected to receive the 2016 American Chemical Society's Francis P. Garvan-John M. Olin Medal for distinguished service to chemistry.

[Read more](#)

The Fusion Power Associates Board of Directors selects Laboratory nuclear engineer **Susana Reyes** as the recipient of its 2015 Excellence in Fusion Engineering Award and fusion scientist **Wayne Meier** for a special award.

[Read more](#)

LLNL researchers **Nerine Cherepy and Michael Pivovarov** are among the 171 new senior members of SPIE, the international society for optics and photonics.

[Read more](#)

A 3D printing device developed by a Lawrence Livermore optical engineer garners a 2015 Federal Laboratory Consortium Far West Region Award for outstanding technology development.

[Read more](#)

Fifteen Lab scientists and engineers early in their careers are named to LLNL's first annual Early and Mid-Career Recognition Program.

[Read more](#)

Seven LLNL scientists are selected as 2015 fellows of the American Physical Society.

[Read more](#)

The Office of Defense Nuclear Nonproliferation establishes a fellowship in honor of the late **Ian Hutcheon**, a longtime Lab employee.

[Read more](#)

Climate scientist **David Bader** is elected a fellow of the American Meteorological Society.

[Read more](#)

Three Laboratory researchers are part of a team recognized with the 2015 Alan Berman Publication Award for its paper reporting on shock-wave experiments.

[Read more](#)

RECOGNITION AND AWARDS



Fifteen Lab scientists and engineers early in their careers are named to LLNL's first annual Early and Mid-Career Recognition Program.



The team responsible for executing the Observations for Model Intercomparison Project (obs4MIPs), a joint NASA and DOE project to make NASA and other satellite data sets more accessible for global climate model evaluation, is awarded a NASA Group Achievement Award for "... innovative leadership and implementation of the NASA Observations for Model Intercomparison Project and its contribution to the international climate research community."

[Read more](#)

Employer Support of the Guard and Reserve (ESGR), an office of the Department of Defense, recognizes Lawrence Livermore's **Roger Rocha** and **Mark Zagar** with Patriot Awards. The ESGR Patriot Award recognizes supervisors for contributing to national security and protecting liberty and freedom by supporting employees participating in America's National Guard and Reserve force.

[Read more](#)

The Nuclear Spectroscopic Telescope Array (NuSTAR) is a NASA satellite that has the first orbiting telescopes capable of focusing light in the high-energy X-ray region of the electromagnetic spectrum. LLNL provided key contributions to the design, fabrication and calibration of the NuSTAR's X-ray telescopes, as well as science data analysis. NASA recognizes LLNL's contribution to the NuSTAR mission for three consecutive years.

[Read more](#)

Three Laboratory researchers are part of a team recognized with the 2015 Alan Berman Publication Award for its paper reporting on shock-wave experiments.

[Read more](#)

LLNL researchers **Tiziana Bond** and **Jean Michel Di Nicola** are named senior members of the

Optical Society, an international society for optics and photonics scientists, engineers, educators and business leaders.

[Read more](#)

LLNL engineers **Tom Edmunds** and **Pedro Sotorrio** are honored by the Geothermal Energy Association for their significant contributions during the past year to advancing technology, spurring economic development and protecting the environment.

[Read more](#)

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